

THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer • TRANSPORT • The Railway News
The Railway Times • Herapath's Railway Journal • RAILWAY RECORD.
RAILWAYS • ILLUSTRATED • ESTABLISHED 1835 • THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"

Telephone No.: WHITEHALL 9233 (8 lines)

Annual subscription payable in advance and postage free:
British Isles and Abroad.....£2 5s. 0d.
Single Copies.....One Shilling
Registered at the General Post Office, London as a Newspaper

VOL. 79 No. 2

FRIDAY, JULY 9, 1943

CONTENTS

	PAGE
Editorials	29
Letters to the Editor	34
The Scrap Heap	35
Overseas Railway Affairs.. .. .	36
A New Fatigue Defect in Rails	38
Railway Coaling Plants—I	39
Locomotive Working on the N.W.R., India—I	41
Railway News Section	43
Personal	43
Transport Services and the War	45
Stock Market and Table	52

DIESEL RAILWAY TRACTION SUPPLEMENT

The July issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

REDUCTION IN SIZE OF PAGE

To economise in paper our readers will observe a slight reduction in the size of THE RAILWAY GAZETTE in that the size of the page has been reduced from 9 in. x 12 in. to 8½ in. x 11½ in. The type area of the page remains the same, namely, 7 in. x 10 in., but the surrounding margins have been reduced. This of course detracts from the appearance of the paper, but is one of the exigencies of the war

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 a.m. till 5.30 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Wartime Wage Increases

STATISTICS compiled by the Ministry of Labour show that weekly earnings of 6½ million manual workers in the last pay-week of January, 1943, averaged 87s. 11d., which compares with 85s. 2d. in July, 1942, and 77s. 9d. in January, 1942. Compared with October, 1938, the latest figure shows an increase of 65.1 per cent., against 59.9 per cent. in July, 1942, and 46 per cent. in January, 1942. Between July and January last the average wage for men rose from 111s. 5d. to 113s. 9d., which was 64.9 per cent. above pre-war, compared with 61.5 per cent. The average for women, as a result mainly of more women doing men's work, rose from 54s. 2d. to 58s. 6d. (80 per cent. above pre-war, against 66.7 per cent.). As might be expected, the figures for the different industries vary very widely. In the metal, engineering, and shipbuilding group, the increase between October, 1938, and January, 1943, was over 75 per cent. The inquiry conducted by the Ministry of Labour does not cover coalmining, agriculture, railways, shipping, the distributive and catering trades, or domestic service. In the case of the railway industry, statistics of average wage-rates have been discontinued since the outbreak of war, but it is obvious that remuneration of railway labour has been much increased. For instance, the war advance to railwaymen has been increased recently to 20s. 6d. a week, and there have been other substantial upward adjustments in railway wages since September, 1939.

The Argentine Government

The recently-formed Argentine Government at first was believed to be inclined towards a more democratic way of life than its predecessor. With little more than a month in office it is, perhaps, a little early to judge, but impressions so far gained do not suggest that the authorities now in power are likely to be more pro-Allied than the Castillo régime. Early optimism that the change in Government would be followed by a more sympathetic attitude towards British capital employed in Argentina, particularly that represented by the British-owned railways, seems to be, on the wane. The financial year of each of the Argentine railways has just ended, and the speeches of the chairmen will be awaited with more than usual interest for any guidance they may be able to give as to the political situation and commercial prospects in Argentina. How far they will consider it wise to discuss the political implications of governmental changes at this stage is as yet uncertain, but by the time the meetings are held in the autumn the position may have clarified.

Argentine Credits in London

At the present time Argentina has very substantial credits in this country, which have arisen because of the disparity in the Anglo-Argentine trade balance. Notwithstanding the fact that these balances have been used for repatriation of foreign debt, the peso credit balance in London was some 295,000,000 pesos, or nearly £22,000,000, at the end of last year, and for obvious reasons it must be expected to continue to increase, at least for the duration of the war. At the same time it is no secret that locomotives and rolling stock on all the Argentine railways have suffered severe depreciation, not only because of the wartime stress placed on them, but also because of the impossibility of the companies making sound financial provision for maintenance and renewals over a number of years. There can be little doubt that these balances in London could be advantageously used after the war in replacements for Argentine railways, but obviously before that can be done the companies must be in a better financial position than has been the case for some years. It is probable that the calls on British railway locomotive and rolling stock builders in the post-war period will be extremely heavy, but for the sake of future trade due consideration should be given to the potential importance of the Argentine market.

Railway Coaling Plants

Particularly at the present time, when it is necessary both to achieve speedy and efficient coaling of locomotives and avoid waste of coal through breakage, efficient coaling plants are among the more important items of railway equipment. Formerly, an appreciable amount of manual labour was used in coaling locomotives; unloading from the wagon was performed by hand, generally into small-wheeled tubs, and in most cases arranged to empty their contents by side or end tipping. In more recent years, labour costs and the need for the attainment of maximum running mileage per locomotive have been responsible in large part for the development of mechanical coaling plants, and close attention is now paid to ensuring their maximum efficiency. With the adoption of more highly-mechanised and speedier devices for coaling, watering, cleaning, and so forth, and with operating and repair methods entailing less time in the shops, the proportion of spare to running locomotives has been reduced to about 10 per cent. Modern coaling plants have

played a considerable part in the achievement of this reduction of idle-engine time, and the extent of the improvement which has been brought about by these factors may be gauged from the fact that at one time the proportion of spare to running locomotives was accepted as being about one third. Elsewhere in this issue appears the first of a series of articles on railway coaling plants by Mr. J. Dalziel.

Overseas Railway Traffics

From the returns available to June 26, 1943, the approximate figures of gross earnings of the British-owned railways in Argentina for the financial year just ended can be approximately estimated. It will be seen from the accompanying table that each of the four larger companies has increased its gross takings. The Argentine North Eastern also shows an improvement for the 52 weeks to June 26 of £78,204, and the Entre Rios one of £109,338. For the Central Uruguay and for the United Railways of the Havana the financial year also ends on June 30, and for the period July 1, 1942, to June 26, 1943, the gross receipts on the Central Uruguay have been £1,557,088, an increase of £218,280, and the traffic figure of £2,679,354 on the United of Havana shows the remarkable advance of £991,847.

	No. of week	Weekly traffics	Inc. or decrease	Aggregate traffic	Inc. or decrease
Buenos Ayres & Pacific*	52nd	81,000	+ 18,900	5,128,380	+579,420
Buenos Ayres Great Southern*	52nd	124,500	+ 720	8,264,940	+708,480
Buenos Ayres Western*	52nd	51,420	+ 13,860	2,794,080	+ 80,280
Central Argentine*	52nd	98,928	+ 21,297	6,748,401	+1,234,539
Canadian Pacific	24th	1,120,400	+156,800	25,592,400	+2,801,000

* Pesos converted at 16½ to £

Aggregate gross earnings of the Canadian Pacific Railway for the first 5 months of 1943 amounted to £22,306,600, an increase of £2,349,000 in comparison with the corresponding period of 1942, but the net earnings of £3,356,200 showed a decrease of £198,600.

Montreal New Central Station

The new central station in Montreal, of the Canadian National Railways, which is to be opened on July 14, is a modified but impressive version of the structure first approved by the late Sir Henry Thornton 15 years ago. It has cost approximately \$29,000,000. The location was well chosen, as it is but a three-minute walk from the uptown St. Catherine Street shopping district and an equal distance from the St. James Street commercial and banking centre. Three separate ramps bring motor traffic from both the uptown and downtown districts to the station entrance, and half a dozen subsidiary and escalator entrances are provided for pedestrians. The famous name Bonaventure will be transferred eventually to the new station, but, to meet special wartime circumstances, it has been decided that the present (old) Bonaventure Station will continue to be used for special purposes. Accordingly, it is felt that some confusion may arise in the public mind if the name Bonaventure is applied to both the old and new stations. To avoid such confusion it has now been decided that the term "New Canadian National Central Station" shall be used in publicity and timetable references incidental to the opening and the transfer of the principal Canadian National services to the new station on and after July 15. This does not imply that the sentiments of those who are in favour of the preservation of the historic name Bonaventure are to be disregarded, but that the psychological time for action is deemed to be the occasion of the complete discontinuance of use of the old station and its abandonment or dismantling.

The Rising Temperature of Tube Railways

As the London tube railway system has been extended, and its use intensified, temperatures have been rising steadily. To combat this, additional power-driven ventilating fans have been installed at many stations. The heat generated by moving trains, escalators, and other railway machinery is dispersed in various ways. Some is carried away by the movement of air. Some passes through the cast-iron or concrete segments which form the tunnel walls, and enters the clay, where it slowly dissipates. The engineers, in seeking to reduce the temperature of this belt of warm clay, desire to know, *inter alia*, what are the actual quantities of heat with which they have to deal. To ascertain this, tests are now being made on a section of tunnel, so that records can be made before the railway has begun the slow process of heating-up which is caused by the running of trains. A set of specially constructed electrical-resistance thermometers is used. A hole $\frac{1}{8}$ in. in dia. is drilled at right angles through the tunnel wall, and 3 to 4 ft. into the clay. The thermometer is inserted, and wiring from it is carried to the surface, where an indicating instrument records the temperature. These will last many months, and should provide data which will enable the engineers of the London Passenger Transport Board to improve still further the ventilation of the tube railways.

Mileage and Traction Units on Indian Railways

The total route-mileage of all railways in India, on March 31, 1942, was 40,477 of which 20,649 were of 5 ft. 6 in. gauge, 15,969 of metre gauge, and 3,860 miles of 2 ft. 6 in. and 2 ft. gauges. The total twelve months earlier had been 41,052 route-miles; 577 miles of line were closed during the intervening year. As this large mileage was almost entirely of 5 ft. 6 in. gauge, a considerable quantity of permanent way suitable for 4 ft. 8½ in.-gauge military railways was released. There were only two miles of new line opened, during the year 1941-42. Of the 40,477 miles total, 36,940 were composed of single line and 3,537 miles of double or multiple track. The total track mileage was 55,635, made up of 44,300 miles of running lines and 11,335 miles of sidings. On March 31, 1942, these lines were served by 5,245 steam and 68 electric broad-gauge locomotives, 2,425 steam and 4 electric metre-gauge, and 542 2 ft. 6 in. and 2 ft.-gauge steam engines. There were also 11 steam and 22 internal-combustion engine railcars and 93 electric-motor coaches on the broad-gauge lines. The corresponding metre-gauge figures were 6, 34, and 24, and there were 4 steam and 24 internal-combustion railcars on the narrow-gauge lines.

The Trinidad Government Railways

The island of Trinidad, the most southerly of the West Indies, has an area of 1,862 square miles and a population of 464,889. The railway system of the island, 118 miles in extent (154 track miles), is owned and operated by the Government. The Trinidad Government Railways date back to 1874, when construction was begun on a 16-mile line from Port of Spain to Arima, completed in 1876. Construction was continued in the early eighties, and in 1913 the mileage was 115, all on the 4 ft. 8½ in. gauge. Of the present-day total of 118, 12 are double-track. In the year 1938 passengers numbered 2,141,143 and 502,150 tons of goods were carried. Gross earnings amounted to \$850,025, and working expenses to \$865,532. After allowing for debt charges there was a net loss of \$299,329 in that year. An English-built 0-8-0 diesel-mechanical locomotive was placed in service some time ago. The Railway Department operates two steamship services—the Island Steamship service between Port of Spain and the islands, and the Southern Steamship service between San Fernando and Cedros, and intermediate points. Railway bus services have recently been introduced. A proposed 6½-mile railway extension from Siparia to the Trinidad Leaseholds Forest reserve has been surveyed, and its approximate course is indicated on the map reproduced at page 48.

Fewer and Smaller Forms

In normal times the London Passenger Transport Board uses an enormous number of forms, record cards, time cards, posters, and other printed documents, for a great many different purposes. Nearly one-half of the forms used in peace-time—numbering about 4,000—have now been reduced in size or abolished. Letter paper has been reduced to 6½ in. x 6½ in. or 8 in. x 6½ in., replacing quarto and foolscap, and each size is designed to fold and be sealed with a paper seal, so that no envelope is needed. Envelopes are now used only when enclosures have to be sent, and economy labels enable them to be used repeatedly. Post-cards are now reduced to 4 in. x 2½ in., the minimum allowed by the Post Office. New envelopes are no longer used for internal correspondence, save in exceptional cases, for which a multi-user design has been introduced. Folders made from scrap material (rexine, linen, or canvas), which can be used over and over again, serve for mail between offices, garages, depots, etc. Scribbling blocks have disappeared and internal memoranda are written or typed on scrap paper. Single space typing is the rule, with much use of the red portion of typewriter ribbons for internal correspondence, on both sides of the paper. When paper can no longer be used and must be discarded, it is carefully collected for salvage, while quantities of documents have been recovered from old files, first used for typing on one face when possible, and then sent for pulping. The necessity for strict economy in the use of paper has been impressed on the staff by suitable notices. Stock forms, printed on one face only, in many cases have now been printed in reverse on the back, enabling them to be cut in two, so doubling the supply.

A Contradictory Use of Terms

We have more than once directed attention to the mistaken use of certain terms, especially the expression "in advance of," in descriptions and reports dealing with railway working. "In advance of" means beyond the point referred to, in the direction taken by the train. In the United States the words have the same meaning as they do here, but in France they signify the opposite. One often sees them, however, incorrectly employed. A recent American accident report said that "two opposing trains should receive approach indications in advance of a stop signal," when the words "in rear" should have been

used. Similarly the additional warning indication used in some multiple-aspect installations in America in rear of a caution indication has been wrongly named "advance approach," when "preliminary approach" is meant. It is curious that this contradictory naming should have been accepted. The indication is not, and cannot be in "advance" of the caution aspect it announces. In another—Indian—report we read that a certain repeater signal informed the driver "in advance" of the outer signal the condition of the latter. Here again "in rear" was meant. It must be admitted that the custom of ordinary conversation is often not in accord with railway usage in this matter, and contributes to the making of slips when writing.

♦♦♦♦♦

Lattig's Electric Signal Machine

The Central Railroad of New Jersey recently celebrated the 50th anniversary of the bringing into use of its first electric-motor signal-machine on a 2-position semaphore signal at Phillipsburg, New Jersey, in 1893. The designer was Mr. J. W. Lattig, who is now 89. His signal machines achieved a certain deserved popularity and we believe that the first extensive use of them was made by the Illinois Central Railroad about 1898. It is believed that Lattig's was the first really successful design of motor-signal machine in America. It was contemporaneous with the first signal machines in Europe, provided by Siemens in Vienna. It is known that J. D. Taylor, the originator of what was at first called the Taylor electric power interlocking, made some electrically worked semaphores for the Chicago exhibition in 1888, but whether these were motor or solenoid mechanisms we are unable to say. Attempts at using solenoids and other electro-magnets had been made before this. Spagnoletti tried some electric semaphores on the Inner Circle in 1875 and Timmis made a complete, though small, installation in 1884 in the neighbourhood of Swansea, and described the apparatus in two papers. Solenoids have the advantage of simplicity but are inefficient for this purpose. For working points they were a complete failure on railways but proved reasonably serviceable on tramways.

♦♦♦♦♦

"The Gateway to the North"

A report of the general board of management of the proposed London & Birmingham Railway, dated January 31, 1832, said: "When this undertaking is completed, there can be little doubt that branches from the chief towns and districts, on each side of the main line, will be formed to the diffusion of benefits throughout the kingdom, and to the especial advantage of the proprietors of this company, by whose main route alone the communication with the metropolis must be maintained." Nearly seven years later this forecast was fulfilled when the line was completed and opened throughout to Birmingham on September 17, 1838, for, as the Grand Junction Railway had already provided the link thence to Liverpool and Manchester, Euston immediately assumed its destined role as the first gateway to the Midlands and the North. In fact, it is not an overstatement to say that the whole structure of the railway system north of the Metropolis took the form it did as a direct result of the purposeful activities of the Euston authorities. Before even the main line was completed, plans were in hand for the formation of branches. The natural corollary, where traffic was heavy, was the subsequent construction of a direct or cut-off line to avoid traversing two sides of a triangle. In some instances, the cut-off provided an addition to the network of the parent system, but in other cases the original circuitous route left a loophole for a rival company to establish the direct connection.

♦♦♦♦♦

Northampton & Peterborough Railway Centenary

We are reminded of the foregoing considerations by the fact that it is just 100 years since the London & Birmingham Railway secured its Act, on July 8, 1843, for its lengthy branch from Blisworth through Northampton to Peterborough. So great was the antagonism of certain landowners to the proposal, and so strong was their representation in the Upper House, that the Bill passed through the House of Lords by a majority of but one vote. The line was opened to the public on June 2, 1845, and provided the original main line to Peterborough; the distance from Blisworth is 47½ miles. Just over a year later, the London & Birmingham Railway became a constituent of the London & North Western Railway, which was incorporated on July 16, 1846, and, of course, this is now part of the L.M.S.R. Peterborough for long remained the eastern output of the L.N.W.R. system, and even today the Bedford—Cambridge branch is the only one which takes L.M.S.R. entire ownership (excluding joint committees) substantially further east than Peterborough, apart, of course, from the London, Tilbury & Southend line, which geographically is virtually a separate system.

The Problem of the Peaks

IN our issue of June 18, in an editorial article on "The Future of Transport," we discussed the relationship of ownership to management and expressed the view that the owners of undertakings, whether State or private persons, should control the management. We said that if efficiency and economy were the test, there was no half-way house and that any scheme which severed this relationship would not be in the national interest. We believe this to be a principle of first-rate importance that cannot be too widely discussed and expounded in connection with post-war plans.

There are other aspects of post-war transport that are of fundamental importance. One of these is the problem of the peaks. There are many varieties of peaks in the public transport business, but common to them all is the great expenditure they entail. It is axiomatic that transport cannot be fully efficient—using "efficient" in its widest sense—unless there is good loading. The usual meaning of a peak is a period when the transport services in question are fully employed; hence it follows that in off-peaks there is spare capacity, and if there is spare capacity there is waste. If the peaks could be removed and the traffic spread over the off-peak times, the capital invested to meet the peak demands would be saved and the remaining capital employed more economically. As it is, on some important services a normal peacetime August passenger traffic pays for the provision of the services for all the rest of the year; without that August peak and the expenditure it entails, the services would be run at a loss. This may appear to be an argument in favour of peaks, and in one way it must be admitted that it is; but if the August traffic could be evenly spread over the year without peaks, there would be a substantial economy in the provision of locomotives, coaches, signalling, and so forth. (The only argument in favour of peaks in such circumstances is that, if they were not there and the traffic was not spread, the service would be non-paying.) There were in this country before the war 47,000 railway carriages, 6,000 brake vans, over 7,500 passenger locomotives, 53,000 buses and coaches, and 9,000 tram-cars. These numbers were dictated by peak requirements; what the numbers would have been had peaks been abolished and the traffic spread, can only be estimated with difficulty, but it is clear the saving would have been substantial.

An indication of what is involved can be seen in this war. Passenger travel by rail has increased by 50 per cent. over pre-war, but coaching train miles have been cut by 30 per cent. Thus the loading of trains has more than doubled. The traffic is more evenly spread throughout the year as the Ministry of War Transport directs the railways to run no additional trains at Bank Holiday periods and insists on an overall limitation of mileage throughout the whole of the summer months. The coaching stock so released has not been standing idle, for large numbers have been diverted to other uses, such as military specials and ambulance trains. But the peaks as we knew them in peacetime have disappeared. The economy is obvious; it is one of the reasons why the net revenue of the railway pool totalled £89 millions in 1942. The increased traffic did not require anything like the expenditure to work it that would have been necessary in normal circumstances. None can doubt, from these figures, the economy of eliminating peaks, although, of course, much of the extra passenger traffic in this even spread is due to the circumstances of the war. Naturally, it cannot be expected that such results could be obtained in peacetime, but it is some indication of what could be done if the passenger transport system could be planned to secure even loading and the elimination of waste. An empty seat is waste, and the peculiarity of transport is that, if a seat goes empty, its service is lost for good. A manufacturer is not in this position; he can usually invoke economies that cut his loss; this is not so with an unused transport service.

Before we leave passenger traffic, the problem in London is of particular interest. Before the war, the numbers of rail passengers carried in the heaviest 30 minutes of the day at the point of maximum load were: District Line, 13,500; Morden—Edgware, 13,000; Piccadilly, 12,500; Metropolitan, 9,000; Bakerloo, 6,500; Central London, 6,000. The seating capacity of the maximum train service possible varied between 4,000 and 6,000. In the off-peak period the seats were well within passengers' requirements and there was considerable spare capacity. The problem of the peaks was thus acute, and in many instances the train services were being worked to maximum capacity at the peaks. There were two remedies: to spread the peaks or to build additional railways. The first was practicable, the second not. New railways cannot be built to deal with peak traffic only: the cost is prohibitive. But to a large extent the L.P.T.B. problem was simplified by the co-ordinated public

transport arrangements in London. No-one who looks at the problem objectively can doubt that.

Turning to freight traffic, before the war there were 664,000 railway-owned wagons, 600,000 privately-owned wagons, about 12,000 freight locomotives, 500,000 goods motor vehicles, some thousands of horse-drawn vehicles, and about 7,000 canal barges. Freight traffic is very seasonal; the winter periods require more transport vehicles than at other times of the year, but there are great variations even in the peaks. Fluctuations in trade also involve wide variations in the demand for vehicles. The problem is the heavy capital expenditure sunk in all this freight transport which is not used evenly, nor loaded to economic capacity. As with passenger transport, unused freight capacity is waste; and the wartime working arrangements present a similar picture to that of passenger transport, except that the seasonal element cannot be eliminated to the same extent. There is no doubt that wagons are now better loaded and that the movement of freight is more economically organised.

What is the significance of this problem of the peaks and of loading and what bearing has it on post-war problems? Surely one point is obvious: unless the transport system is planned as a whole the waste which is involved cannot be eliminated or minimised. We hear a great deal these days about full employment and controlling the trade cycle, and this is another kind of peak. For example, at the end of 1931, when the great depression was at its worst, the railways had to withdraw from service and store 1,141 steam locomotives. Thus, somewhere between £5-7 millions of capital was immobilised. After the war the drive to control the trade cycle will benefit the railways and other forms of transport as well as everyone else. Of course, peaks are not the only aspect of the transport problem; there are others equally important, and, unless all are considered and weighed carefully, there is little likelihood of a plan emerging that will provide the country with the most efficient and economical system of transport that can be devised.

◆◆◆◆◆ The Overland Route to Darwin

UNTIL 1940 there was a 307-mile gap in the land communications between South Australia and Darwin, in the Northern Territory on the Timor Sea, namely, from Tennant Creek to Birdum, and the only connection between these places was by the overland telegraph line and a track beside it. There was, however, the Central Australia Railway from Port Augusta to Alice Springs (771 miles), and onwards a 313-mile road from Alice Springs to Tennant Creek. From Darwin southward there was, moreover, the North Australia Railway, extending for 316 miles to Birdum. In that year it was considered essential to complete the continuous strategic line of communications from South Australia through to Darwin by building an extension of the inter-rail Alice Springs to Tennant Creek route from the latter point to the railhead at Birdum, and thus make available a 1,917-mile chain of railway and road linking Adelaide in the south with Darwin in the north. The State Governments of South Australia, Queensland, and New South Wales agreed to construct this 307-mile road jointly, each undertaking to complete about 100 miles of it. Construction was decided upon by the Commonwealth Government in August, 1940, and, as the route lay through country liable to inundation by flood water once the rainy season began in December, it was essential for the whole work to be completed in under four months, a difficult task in view of the fact that men and mechanical appliances had to be transported over long distances by combinations of sea, rail, road, and bush track. Some account of the work was published in *The Railway Gazette* for November 28, 1941.

With the entry of Japan into the war, and the relationship of Darwin strategically, the two railways concerned assumed an importance vastly different from their original status, and they became parts of an essential line of communication of incalculable value to the war effort. Both the Central Australia and the North Australia Railways are of 3 ft. 6 in. gauge. To meet the requirements of enormously increased wartime traffics, substantial improvements have been undertaken to the permanent way. On the North Australia Railway ballasting operations were undertaken on the section from Darwin to Pine Creek (146 miles), on which very little maintenance ballasting had been carried out since the line was opened for traffic in October, 1889. On the Pine Creek to Katherine section, substantial numbers of karri and jarrah sleepers were renewed with local ironwood sleepers, a timber claimed to be immune from attack by white ants and dry rot. The renewal of a considerable number of bridge transoms had also to be undertaken. On the Central Australia Railway, during the financial year 1941-42, sleeper renewals to the extent of 59,448 were effected, of which 56,538 were on the section from Port Augusta to Oodnadatta. On that

section there are 1,006,500 sleepers, of which 847,318, or a little more than 84 per cent., have been renewed since the operation of this railway was taken over by the Commonwealth Railways Administration from the State of South Australia on January 1, 1926.

Special works, undertaken in 1940 to place these two railways in a position of preparedness to meet heavy transport demands, assisted materially in the satisfactory handling of the greatly increased traffics which have since been conveyed. Further demands subsequently made by the Defence Authorities required even greater preparations to be undertaken, and there has been extensive augmentation of equipment and facilities. Embraced in the programme are: the making available of additional locomotives and rolling stock; the construction of further crossing loops and sidings; the extension of more of the existing loops and sidings; the provision of increased workshop and running shed facilities, water storage and treatment plants, coal handling equipment, and housing for the greatly augmented staff; the development of existing, and provision of additional, water supplies; and the installation of the train control system of safe working in lieu of the permissive block system on the Central Australia, and of improved means of communication, including a modified form of train control, on the North Australia Railway.

◆◆◆◆◆ A New Rail Defect Epidemic

REMINDEES are constant that it is not possible to conduct the affairs of a railway on departmentally watertight compartment lines. One such reminder has just come from the United States, where a new steel rail defect, known as "gauge corner shelling" and described in an article on page 38, is causing increasing concern to American permanent way engineers. It occurs chiefly on the high rail of sharply curved lines carrying very heavy traffic, and is the breaking away of strips of metal from the running corner of the rail, as the result, it is believed, of fatigue of the steel. Already the Norfolk & Western Railway, one of the worst affected, has laid 10,000 tons of new rail in the road to replace rails which, for the most part after only three or four years of life, have developed this defect so seriously as to be no longer suitable for use.

Once again it would thus seem that traffic conditions are outstripping the capacity of the rail to bear them. During the last twenty years the average weight and speed of trains have increased in the United States, in all probability, more rapidly than in any other country; and to meet this demand motive power has grown to such an extent that locomotives and tenders of over 400 tons, are now common, and in some cases even 500 tons is exceeded. In turn rail sections have had to be increased in size up to the 152 lb. per yd. section of the Pennsylvania Railroad and the 131 lb. section that is in widespread use elsewhere, to provide adequate support for axle-loads up to and exceeding 30 tons. Other conditions being equal, it is demonstrable fact that with every growth of section, the structure of the steel, as demonstrated by physical and metallographical tests, tends to deteriorate, and to become less fitted to resist abrasive wear. To provide more resistance without added cost, American railways have therefore advanced the carbon content of their steel to very high figures, to secure harder rails; and the results of this policy are now becoming abundantly apparent.

The first result, of course, has been extreme susceptibility to transverse fissuring, which has caused many casualties to trains and the removal of tens of thousands of rails from the track. The second is this gauge corner shelling; and it is not without significance that the worst sufferer from the latter defect is a railway which has selected its rail casts with the highest carbon contents for use as the high rails in curves, where the shelling is most severe. The railway concerned uses 2-8-8-2 and 2-6-6-4 Mallet articulated locomotives of which the adhesion weights alone are 233½ and 192 tons, and the average weight on each driving wheel 14½ and 16 tons respectively. Here, then, is a problem in which the traffic, locomotive, and engineering departments are all concerned; the engineering department, however, is bearing the burden, and economies effected by the two other departments in operation and motive power may in time be offset by increased costs of track maintenance.

To British railways the shelling defect is not unknown, and from time to time it has been known to develop over considerable stretches of line; but where the shelling has taken on the character of an epidemic, it has usually been related to rail age rather than to specific traffic or location conditions. That is to say, rails which have been in the track for a considerable term of years have suddenly succumbed, as a result of fatigue, to the attacks of heavier and faster present-day traffic. There are American engineers who still look on higher carbon contents as the solution of this particular problem but there are others who consider that increased manganese and silicon would provide the cure, together with some form of heat

treatment, and there is little doubt, in view of present-day rail research, that the latter is the more enlightened view. At the present time the various departments of American railways are much more inclined than hitherto to come together for mutual examination and research into problems that are of joint concern, and in such a problem as this the rail manufacturers also might well be asked to collaborate.

In this connection, it must be remembered that American steel manufacturers still demand an extra of \$2 a ton for medium manganese rails (the 140,000 tons of 95 lb. bull-head rails sent to Great Britain during the war for this reason have been of high carbon composition instead of our standard quality), and this tax has proved a hindrance to progress along medium manganese lines. Possibly a solution of the American shelling problem that might be tried to considerable advantage would be the use of a steel containing about 1.50 per cent. manganese, but with considerably less than the normal American carbon content (not more, say, than 0.50 per cent.), coupled with a fairly drastic sorbitic treatment of the rail-head. To date high carbon contents would appear both to have been the prime cause of the worst American rail troubles, and also to have militated against the success of heat treatment; and it may well be time for this policy to be seriously reviewed.

Right- and Left-Hand Running

FROM time to time we receive inquiries from all parts of the world regarding the railway practice in other countries as to the use by trains of either the left or right hand track on double-track railway lines. As public railways in their origin were virtually a special form of toll road, doubtless the highway "rule of the road" was responsible for the early adoption of left-hand running in Great Britain, where such practice has been, and is, customary. Apart from Great Britain and Ireland, road traffic in most countries now keeps to the right, but right- or left-hand running on the railways in many cases fails to correspond with the street traffic rules of the country. This may be accounted for by the pioneer railway-building activities of British engineers a century ago, and certain European countries, such as France, Belgium, and Italy, copied George Stephenson's practice on the Liverpool & Manchester Railway in adopting left hand running.

The position at the outbreak of war was that trains ran on the left-hand track, that is, passing those travelling in the opposite direction on the right hand, in Great Britain and all countries of the British Commonwealth (except Canada); in South America, China, Egypt, and Japan; and, among European countries, in Austria and her succession states (with the exception of some sections of line), Belgium, France (excepting Alsace-Lorraine and on the Paris Metro), Hungary, Italy, Portugal, Sweden, and Switzerland, and on the Northern Railway of Spain. Right-hand running is in force in Canada, the United States of America (except on the Chicago & North Western Railway, which was originally an English concern and runs left handed), Soviet Russia, Turkey, and (in Europe) the Baltic States, Denmark, Finland, Germany, Holland, and Norway, and on the M.Z.A. of Spain. There was once another exception in the U.S.A., namely, the Lake Shore & Michigan Southern, now part of New York Central System, which was changed over to right-hand running about 1909-1910. In Great Britain, the Festiniog Railway has always followed right-hand running at the passing loops, and for many years the Greenwich line, between London Bridge and Charlton, was worked right handed, but was changed over on Sunday, May 26, 1901.

In the neighbourhood of frontiers—old and new—mixed arrangements apply. Thus, the Alsace-Lorraine section from the old frontier (near Avricourt) to Saarbouurg, is left handed, with a flying junction near the latter place to cross the lines over. Similar arrangements are found on the line to Metz, and so on. From Kleinbettingen to Luxembourg, worked by the Alsace-Lorraine administration, left-hand running is followed, but German signalling used. At Esschen, where the Antwerp-Rosendaal line enters Holland from Belgium, the lines cross over on the level. Sometimes for convenience a short piece of line is worked contrary to the general practice. Thus, approaching Nuremberg from Halle trains travel through two or three stations left handed, no doubt to enable the lines to fit in more conveniently with others at the adjacent junctions. This is often found (as near Metz) from a frontier (or old frontier) to a nearby junction station. In some countries where the English left-hand running was copied at the outset, proposals to change to right-hand running were from time to time entertained, as in Switzerland, but came to nothing. Portions of line were reversed in old Austria, after some agitation, with the result that there was a certain amount of right-hand working in Czechoslovakia. Under German auspices it is known that a

considerable measure of standardisation has now been achieved with the highway rule of the road, but we have no precise information about railway changes in Axis-controlled Europe. As Alsace-Lorraine is now regarded by Germany as part of the Reich, presumably the change-over at the frontier between Alsace-Lorraine and France proper is still preserved. It is possible that minor changes have been effected in Austria, the Protectorate of Bohemia & Moravia, and Slovakia.

♦♦♦♦

The Problem of Theft and Pilferage

ONE of the most unpleasant issues which the British railways and other transport companies have to face today is the abnormal increase of theft and pilfering which has been so pronounced throughout the country since the commencement of hostilities. The effect has been to cast grave reflection on the good name of all transport companies and their employees, and to throw suspicion on innocent and guilty persons alike. The experience of the last war was that when the railway companies were compelled to engage all types of temporary labour to replace many regular members of the staff called to the Forces, a slight increase in petty pilfering occurred. In addition, the need for rigid economy of packing material has meant that inferior packing is being used which results in valuable commodities becoming exposed during transit, and thus providing additional temptation to men and women who would be above reproach in normal times. Apart from these factors, however, it can be said quite frankly that the large scale attempts which are being made to rob and defraud the railways were certainly unprecedented.

On the other hand, it would be wrong to assume that railway employees are responsible for all goods stolen from the company's premises. There is ample evidence to the contrary. A considerable number of thefts have been committed by unscrupulous people who take advantage of the "blackout," and, under the cover of darkness, break into any premises likely to contain merchandise. It is also well known that in affording reasonable facilities to traders, all classes of persons are given free access to the railway companies' premises. These persons, through constant visits to the station, become fully conversant with goods or passenger traffic working, and this knowledge proves very useful should they desire to commit acts of fraud, or attempt to obtain goods belonging to another trader. All who are acquainted with station working will appreciate how difficult it is to detect these irregularities. Again, the railways have occasionally engaged the attention of delinquent children, and several instances have been reported where boys under eleven years of age and lacking parental control have attempted to raid goods yards. Another type of individual giving trouble is the thief who mixes with passengers on railway platforms, and in the blackout walks off with a package of luggage, or makes away with a mailbag.

In an endeavour to frustrate these acts, which interfere with the supply of the nation's food, and commodities, and affects the efficient conduct of the war, officers of the companies have met representatives of the men and acquainted them with the seriousness of the position, and genuine concern has been registered about this feature of railway working which undoubtedly reflects upon the reputation of all employees. Details of arrests and convictions usually are fully reported in the national press, and the subject is ventilated by trade union officials whenever possible. After all, some solution should be found to bring about an improvement, and the assistance of every employee should be sought to stamp out this unsavoury feature of wartime working.

THREE-TIER SLEEPERS ON UNITED STATES RAILWAYS.—Reference has been made during the past two years to experiments in the United States with sleeping accommodation for "coach" or third class passengers. Hitherto the development of coach comfort, in both day and night travel, has been in the direction of reclining chairs, which can be adjusted at night to almost horizontal positions; and in the latest reclining chair cars although the seats are in pairs on either side of a central vestibule, each seat can be separately adjusted to the angle most desired by the individual user. The New York Central System and the Pennsylvania Railroad, however, have lately been experimenting, on their Pacemaker and Trail Blazer all-coach expresses between New York and Chicago (which are only 1 hr. slower on their journeys than the crack Twentieth Century Limited and Broadway Limited all-Pullman flyers), with "coach sleepers" fitted with three tiers of sleeping berths, arranged transversely. These cars are of Pullman construction, and have proved so successful that the Pullman Company is now building 50 three-tier sleepers and has a further 50 in prospect. The Pennsylvania Railroad is similarly adapting a number of cars which have adequate internal height.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

War Advance Claim by Senior Railway Staff

London, N. 20. July 3

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In the daily press today it is announced that railway staff in receipt of salary between £500 and £1,000 are to receive a bonus of £53 a year.

As the writer of the letter which you kindly published in your issue dated February 12, 1943, which eventually resulted in questions being asked in the House of Commons, I wish to thank you on behalf of members of the railway staffs, who actually wrote to their M.P.s, for the very strong articles which appeared in *The Railway Gazette* on this matter, copies of which were sent to the local members concerned.

It is these articles which have contributed so greatly to the satisfactory conclusion of this matter.

Yours faithfully,

L.N.E.R. ELECTRICAL

July 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I want to offer you my most sincere congratulations on what you have been good enough to do—and so successfully for "The Senior Railway Staff" and for your tenacity in holding on to the two points:—(1) Retrospective Payment and (2) Payment in lieu of holidays. I am sure they will all feel very grateful to you. "A friend in need, etc."

Yours faithfully,

RAILWAYMAN

A Plea for Railway Statistics

London, E.C.4. July 5

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Before the war the Ministry of Transport used to publish annually a set of railway returns which gave useful comparisons with previous years and made it possible for an interested outsider to size up the railway position. Since the war few, if any, official statistics have been issued about the work done by our railways. In the City it was believed that the former returns were suspended because the Government was negotiating the terms of the Control Agreement with the companies, though there may also have been fears current about giving information to the enemy. After four years of war there cannot be any force in these arguments. It is evident from the article, "L.M.S.R. 'Carry On'" in your issue of July 2 that statistics are available in plenty and business people are surely entitled to have the figures.

Things are done differently in the United States where full details of railroad operations are accessible to all. American railroad performance has been phenomenal and the authorities across the Atlantic are wise to broadcast the results. Why should we be kept in the dark?

Yours faithfully,

ECONOMICUS

North London Timetables, July-September, 1866

Essex House, W.C. June 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The North London Railway timetables for July, 1866—two years before the District Railway had got even as far as Westminster—disclosed a shorter lived and earlier roundabout service from Broad Street than the L.N.W.R. "Outer Circle" to Mansion House, in the form of a through service every quarter of an hour from Broad Street to Fenchurch Street, calling at all intermediate stations and timed to take 28 min. on the journey from Broad Street to Fenchurch Street, and 26 min. in the reverse direction.

This service, unlike the more famous "Outer Circle," was of short duration; Broad Street Station was not opened until October 31, 1865, and the timetables for August, 1866, contemporaneously with an announcement that "the new passenger station in the East India Road, Poplar, will be opened for traffic on August 1, 1866," show this quarter-hourly service diverted to Poplar, and a separate connected service established between Bow and Fenchurch Street, a terminus from which the North London Railway did not finally withdraw until December, 1868.

The "Alterations for September" (1866) contain announcements that "the North London trains to and from Kew will call at the new (High Level) Station, Willesden Junction" (and therefore the earlier timetables show the trains running non-stop between Kensal Green and Acton) and that "on and from September 1" (1866) "until further notice a service of trains will be run between Chalk

Farm and Barking Junction, calling at all intermediate stations." Although these intermediate stations did not include the discarded Kingsland, and passengers from Dalston would "have to travel by the Poplar trains and change at Hackney or Victoria Park," this later announcement is interesting as showing a regular passenger service along the north side of the Dalston triangle after the opening of the Broad Street extension.

These three timetables also advertise an "Early Cattle Market Train" on Mondays only, leaving Windsor (L.S.W.R.) at 6 a.m., and after travelling via Brentford and Kew, arriving at "the Cattle Market Station" in Maiden Lane at 7.25 a.m., with a return service timed to leave the Cattle Market at 3.55 p.m. and arrive at Windsor at 5.7 p.m.

Yours faithfully,

KENNETH BROWN

Early Railway Records

Montevideo. May 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your issue of March 26 just to hand, there appears an interesting early "classification of passenger traffic" of the old Birmingham & Derby Railway, May, 1841. An error occurs, however, in the comment made (under "The Scrap Heap") where it is suggested that a few tickets were issued from Hampton to Birmingham by the devious route via Whitacre. This, of course, is wrong, as the direct line, that is, Whitacre Junction to Birmingham (Lawley Street) was not opened until February 10, 1842, and which route in any case would be about 18 miles long as against the "Birmingham 9½ miles" which appears upon the classification sheet.

What is really referred to in the classification sheet is the passenger traffic between Hampton and Birmingham booked by the Birmingham & Derby trains running into Curzon Street Station there; this running of the Birmingham & Derby trains between Hampton and Birmingham was carried out by their own locomotives and rolling stock and thus would naturally appear on a B. & D.R. classification. The distance given—to Birmingham 9½ miles—is curious because all London & Birmingham records which I have seen give the distance between these two stations as varying between 9¼ and 10¼ miles.

Your caption, "Salvage and History," to the note focuses attention on the salvage drive bringing to light various documents of interest relating to the early days of railways; whether such casual bringing to light in any appreciable degree compensates for the almost inevitable destruction of much historically valuable material seems doubtful. Perhaps this note may end—even at so late a date—with a special call to railwaymen to bring to notice documents throwing light on that "dark age" period of locomotive development, the years 1835-1855.

Yours faithfully,

P. C. DEWHURST

Locomotive Lineaments

London. July 1

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Two of your correspondents have referred recently to the question of chimney design and appearance. It should be noted that ever since the provision of an inner chimney relieved the outer chimney of its duty as part of the locomotive, the matter has been entirely a question of fashion. The general increase in boiler diameter gradually reduced the height of the outer chimney, so that a short squat chimney became associated with a powerful engine. In fact, some cases have occurred where the top of the chimney has not been carried to the limit of the loading gauge.

A quotation is made that "a chimney to a locomotive is like a hat to a man; the finishing touch." This might be amended to read "a hat to a woman" inasmuch that fashions change continuously.

The knobs and curls of Edwardian days had their parallel in chimney shapes and your correspondents must appreciate that there are many younger people amongst the public today who have an entirely different idea of shape and form. If the locomotive is going to hold its place, then, wherever possible, we must avoid an appearance which will give the impression that it is old-fashioned. It is very difficult to appreciate that both these correspondents were looking through the same spectacles when one remarks that an ugly chimney spoils the appearance of a fine locomotive, and the other refers to special attention given to this same design in order to enhance the appearance of the engine.

Let us be sure that we move with the times and design our engines to look modern and, if possible, of good appearance, provided that the function of the part is not prejudiced.

Yours faithfully,

HUMBLE DEVOTEE

The Scrap Heap

		Peace	War
London	... dep.	4.0	12.45
York	... arr.	6.40	4.50
Newcastle	... arr.	8.0	6.46
Edinburgh	... arr.	10.0	9.35

6 hr. 8 hr. 50 min.

In a single day recently the L.M.S.R. loaded and despatched 1,057 tons of fish from Fleetwood, and thus established a record daily handling. The previous record for one day, as recorded in our April 2 issue, was 937 tons.

METAL FOR AXIS TRESPASSERS

By removing 2,353 "Don't Trespass" plates from their property, and substituting small pasteboard notices, the L.M.S.R. has recovered 59 tons of metal, which has gone to make war on the Axis trespassers.

About 1,500 cyclists now leave their machines at London Transport stations every day and continue their journeys to town by Underground. In outlying districts, many persons who formerly used private cars to get them to the station have had to become cyclists.

A MIDLAND MAZE

Mr. J. H. Gibbons writes concerning the item "A Midland Maze" in our issue of March 5, and points out that there are only two stations between Trent and Nottingham; these are Attenborough and Beeston. One can travel to London from either of these stations whether "up" or "down" lines. To a stranger who visited Attenborough and asked him which platform was for London, he said: "Well, it does not matter, you cannot catch the wrong train for London, as you have to change whether you go to Trent or Nottingham."

In normal times, it was curious to see two trains standing in the station (one on

the "up" and one on the "down" line); it was left to the passengers to decide which train they would take for London, as they would have to change either at Trent or Nottingham. The times of these two trains were: 6.23 p.m. Attenborough to Nottingham for 6.40 p.m. Nottingham to London, and 6.20 p.m. Attenborough to Trent for 6.53 p.m. Trent to London.

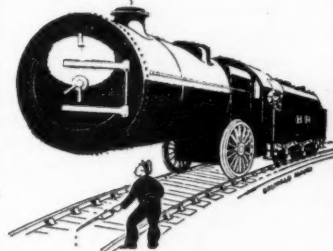
Although Mr. Gibbons has lived in Attenborough for 20 years, he finds it confusing to say whether Nottingham to Trent is "up" or "down" because of trains coming from Nottingham for Leicester and Derby. He has had a conversation with the signalman at Attenborough, who says that Nottingham to Trent is an "up" line. Trains for Leicester are "up" and for Derby "down" after calling at Trent; therefore, that means that a journey from Nottingham to Derby has "up" and "down" lines.

Over 35,000 L.M.S.R. staff are in the Fighting Services; 594 have been killed, 309 reported missing and 619 are prisoners of war. Writing in the current month's staff journal, Sir William Wood, President, mentions that the replies to invitations from the L.M.S.R. Comforts Fund to prisoners to state their particular wants show a general desire for books on railway matters, music and cards. "Requests for the 'Sunday Pint' and 'a return half to Euston' recently expressed," adds Sir William, "have reluctantly been placed on the list of articles banned by regulations."

STATION SCENE

A train going to Oxford is pulled up in Slough station. Presently a woman leans out of a carriage window, calls a porter, and excitedly explains she has dropped some valuables and they are now under the train. The porter consults with the guard, then tells the woman that the train would stop just outside the station, he would retrieve the fallen valuables, and bring them to her. The train moves, the arrangement

There isn't
even half an engine
to spare for
unnecessary journeys



... so 'stay put' this
summer

RAILWAY EXECUTIVE COMMITTEE

goes according to plan, and as the porter goes along the train every window is filled with passengers gazing at the parcel of valuables in the porter's hands. It was a 2 lb. carton of sugar.—From "The Londoner's Diary" in "The Evening Standard."

WHITEHALL STAFFS

The Chancellor of the Exchequer recently stated that the number of whole-time non-industrial staff employed at April 1, 1943, in Government departments which have been set up since the war is as follows:—

Ministry of Aircraft Production	16,026
Ministry of Economic Warfare	1,385
Ministry of Food	37,641
Ministry of Fuel & Power	4,816
Ministry of Information	20,805
Ministry of Information (Postal & Telegraph)	12,052
Censorship Department	1,211
Ministry of Production	10,806
War Damage Commission	17,469
Ministry of War Transport	17,469

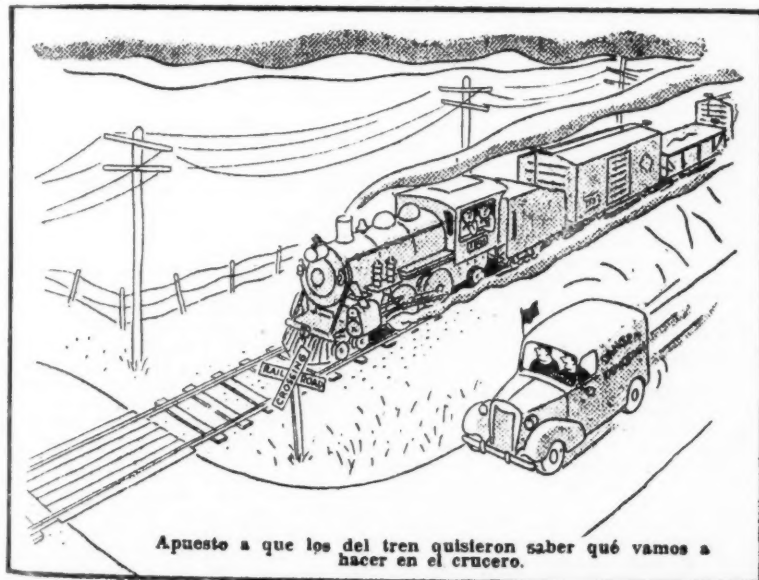
Some of these departments (e.g., Ministry of War Transport and Ministry of Aircraft Production) have absorbed functions which formerly were performed by pre-war departments. The numbers therefore include staff transferred from pre-war departments, and it would be a mistake to regard all of them as representing wartime staff increases.

TAILPIECE

(The decision to pay the full war advance to railway staff earning between £500 and £1,000 a year is retrospective only from April, 1943. The original claim was made in 1940.)

One fine day this plaint I heard:
Retrospective, blessed word!
But how blessed must depend
On what it means in cash to spend.
O how blessed if for me
The retrospective term might be
Forty, and not forty-three!

E. C.



Apuesto a que los del tren quisieron saber qué vamos a
hacer en el cruce.

"I'll bet these people in the train would like to know what we are going to do at the crossing"

[From "Ferreñales," the organ of the National Railways of Mexico]

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

VICTORIA

Compressed-Gas Buses

Compressed coal gas is to be used on buses of the Melbourne Tramways Board on the Elwood—Collingwood route. The gas will be stored in cylinders slung under the chassis, and by the use of this fuel it is hoped to save 85 per cent. of the petrol consumption.

New Railway Bridges

Two old railway bridges over the river at South Yarra, are to be replaced by new structures. The bridge now carrying the Brighton traffic was erected as long ago as 1860. Before that date Brighton was served by a loop from the St. Kilda line. In 1884 a second bridge for Caulfield and Gippsland traffic was erected at South Yarra alongside the bridge carrying the Brighton line. These two bridges have been repaired and strengthened from time to time, and now the Victorian Government Railways have prepared plans for their replacement with modern structures. These new bridges will be erected side by side to provide for suburban and country traffic passing through that section of the metropolitan area.

UNITED STATES

Record Wagon Loadings

For the fourth consecutive year, as a result of a country-wide programme of improvement in which both consignors and consignees have co-operated fully with the railways, an increase was registered in 1942 in the average tonnage carried in American wagons, which are all, of course, of high-capacity bogie type. In 1940 the average load carried by a wagon was 37.7 tons (of 2,000 lb.); in 1941, 38.2 tons; and in 1942, 40.1 tons. In this increase, the Office of Defense Transportation enactments concerning the minimum tonnage of less-than-carload traffic to be handled in individual wagons doubtless have played an important part.

New Hiawatha Trains

Since the Hiawatha streamliner of the Chicago, Milwaukee, St. Paul & Pacific Railroad went into service in May, 1935, there have been three replacements of the major part of the stock—excepting the parlour and beaver-tail cars—and 1942 saw the introduction of 31 coaches. The latter comprise two dining cars, two auxiliary dining cars to provide additional seating space, two passenger-baggage cars, and 25 reclining-chair coaches. The length of these vehicles is 82 ft., width 10 ft., and height from rail to top of roof, 13 ft. 1 in.; the weights of each of the four types mentioned are 62, 57½, 56, and 56½ tons, respectively.

These weights might have been considerably less, as in the case of the earlier Hiawatha, but for the difficulty in obtaining light-weight materials; a proportion only of the high-tensile alloy steel needed was obtained for the coach construction, and mild steel had to be substituted for aluminium in many of the fittings. Hair and spring upholstery had to be used for seats in place of rubber, and other parts of the equipment, such as seat frames and lighting fixtures, had to be fabricated at the company's shops in Milwaukee, where the cars were built. Many improvements over previous practice have been introduced, such

as redesigned bogies with Budd disc-type brakes, redesigned coach bodies with skirts the full length of the body extending downwards 16 in., Waukesha propane-engine-driven air-conditioning and lighting equipment; and fluorescent lighting. The coaches, which include a smoking lounge seating 12, seat in all 68 passengers, and the dining cars 48; the auxiliary dining car is a vehicle of a new type, seating 26, with a buffet section for the service of light refreshments and a side corridor to give unobstructed access to the dining car. The displaced Hiawatha stock has been transferred to the Mid-West Hiawatha and the trains recently installed on the Chicago-Milwaukee-Green Bay and other Wisconsin services.

Railway Stocks

Despite the unprecedented growth, during 1942, of the gross and net earnings of American railways—a process which continues this year—many of the leading Class 1 lines still are paying no dividends on their common (i.e., ordinary) or preferred stock. This applies, for example, to the Baltimore & Ohio; Delaware & Hudson; Delaware, Lackawanna & Western; Gulf, Mobile & Ohio; Illinois Central; Missouri-Kansas-Texas; New York, Chicago & St. Louis; New York, New Haven & Hartford; Northern Pacific; Southern; and Western Maryland Railways.

In 1942, however, the New York Central System, Southern Pacific Lines, Erie Railroad, and the Texas & Pacific Railway were able to resume payments on common stock for the first time in some years. Many of the companies concerned have large accumulations of cash at their disposal, but indications are that they will exercise extreme care in its use, recognising that present conditions are likely to be temporary. Further, most of the American lines have been borrowers on a large scale from the Reconstruction Finance Corporation and other financial bodies, and they are making debt reduction a primary aim; indeed, even more is likely to be done in this direction in 1943 than in 1942. Although the burden of indebtedness varies according to the railway concerned, and although with some there is little or no likelihood, even with earnings maintained for some time on the present scale, of paying dividends on the common stock, with others, such as the New York, Chicago & St. Louis, Northern Pacific, and Southern, the prospects are considerably brighter. Another controlling factor is that the Interstate Commerce Commission has ordered the financial reorganisation of lines which were once insolvent—although no longer so on the basis of current earnings—and this is likely to result in the extinction of any common stock rights in such cases.

Common Stock Quotations

It is remarkable that, whereas in the years 1925-30 the average value of the common stock of American railways was over 100, the present average is round about 30, despite the fact that the net income in 1942 of Class 1 railways in the United States was \$959 million, the highest in history (even the previous record, of 1929, did not quite reach the \$900 million mark). It is thus necessary to finance a very large proportion of present railway improvements by borrowing, rather than by the sale of stock. Nevertheless, certain railways are enjoying a con-

siderable measure of prosperity, which is shown by their current dividend payments.

The Norfolk & Western Railway Company, one of the most important coal carriers in the country, paid 10 per cent. on its ordinary shares in 1942; this is a drop from the 15 per cent. of 1941, but it appears likely that the dividend can be maintained at 10 per cent., and the common stock concerned is quoted at about 170. The Alabama Great Southern paid 9 per cent. in both years; the Louisville & Nashville and Union Pacific, 6 per cent.; and the Pittsburgh & Lake Erie 6 and 5½ per cent., respectively. The Atchison, Topeka & Santa Fe was able to increase the dividend on its common stock from 2 per cent. in 1941 to 6 per cent. in 1942; and, as the stock is quoted currently at about 45, this means a present return of 13 per cent. on the investment.

Apart from the Norfolk & Western Railway Company common stock, indeed, no other ordinary railway issues are quoted at above par, and many of them, like certain of their dividendless counterparts in Great Britain, have a purely nominal value. Others have a value out of all proportion to their market price, for example, the common stock of the Pennsylvania Railway Company, paying 2 per cent. in 1941 and 2½ per cent. in 1942, and quoted at only 24, despite the present prospects of that progressive company, which in 1942 for the first time in its history achieved a net income of just over \$100 million.

ARGENTINA

Transandine Train Service

During the winter months the Buenos Ayres & Pacific Railway is operating one international train a week to Chile, combining in Mendoza with the C.I.T.A. motor-car service, which connects at Punta de Vacas with the transandine trains. The train leaves Buenos Aires on Thursdays at 11 a.m., and the same day in the opposite direction trains leave Santiago at 8 p.m., arriving at Buenos Aires on Saturdays at 5 p.m.

The same company is also running an experimental weekly express day train, El Sanjuanino, between Buenos Aires, Mendoza, and San Juan and vice-versa. The train, which is limited to passengers between the points named, leaves Buenos Aires on Fridays at 7.30 a.m., arriving at Mendoza at 9 p.m., and San Juan at 11.10 p.m. The return journey is made on Sundays, leaving San Juan at 5.45 a.m., and Mendoza at 8 a.m., arriving at Buenos Aires at 9.15 p.m. The distance to Mendoza is 664 miles, and to San Juan 744 miles.

Mechanical Engineers' Meeting

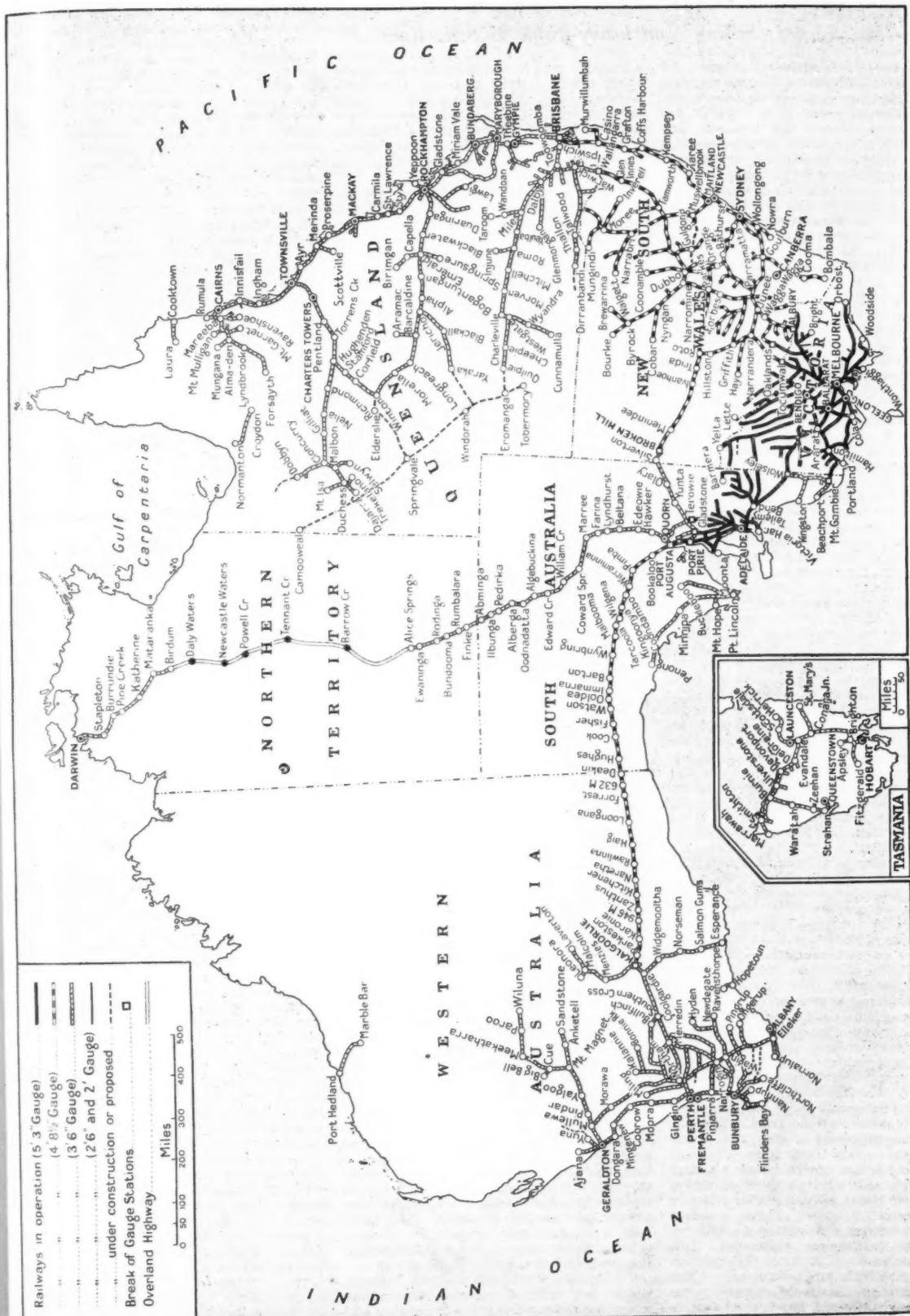
The opening meeting of the 1943 session of the River Plate branch of the Institution of Mechanical Engineers was held in Buenos Aires on May 12, when the Chairman, Mr. P. J. Dawes, delivered the inaugural address on the education and training of mechanical engineers, with special reference to post-war problems and conditions. The prizes awarded in connection with the 1942 examinations were presented to the winners by Major Oscar Loewenthal, General Manager of the Buenos Ayres Great Southern and B.A. Western Railways. The gold medal for the best pupil of the year was gained by Mr. H. H. Hughes, who also received the senior chemistry prize, given by Mr. H. N. Bassett, Chief Chemist of the B.A.G.S.R. and B.A.W.R.; the junior chemistry prize, also awarded by Mr. Bassett, went to Mr. F. Cibils.

which
idend
pany,
ers in
inary
in the
likely
ed at
e con-
Ala-
nt in
shville
d the
cent,
ka &
divi-
2 per
; and,
about
13 per
Rail-
ended,
es are
them,
unter-
purly
ue out
price,
of the
paying
ent. in
ite the
e com-
ime in
of just

Buenos
ing one
e, com-
motor-
anta de
s. The
ursdays
pposite
8 p.m.,
days at

ning an
rain, El
s, Men-
r. The
between
Aires on
Mendoza
m. The
undays,
and Men-
os Aires
ndoza is
es.

ting
3 session
stitution
Buenos
man, Mr.
address
mechanical
to post-
ne prizes
1942 ex-
winners
General
s Great
Railways.
il of the
ghes, who
ry prize,
t, Chief
A.W.R.;
awarded
ils.



Sketch map of the railways of Australia, indicating gauges. The route is also indicated of the overland highway which provides an essential link in the north-south line of communications serving Darwin (see editorial article, page 32)

A New Fatigue Defect in Rails

"Gauge-corner shelling" on heavy-traffic U.S.A. lines

FOR some years those responsible for track maintenance in the United States have been watching with some concern the development of a type of rail failure, which, though not unknown previously, has never before manifested itself to so serious an extent. It is confined almost exclusively to the outer or high rails of curves on stretches of line carrying very heavy traffic, and is a breaking away of metal on the running edge of the rail, known as "gauge-corner shelling."

It was in 1938 that attention was first drawn to the fact of this defect developing on a major scale in rails only three or four years old, and the problem is now considered as of sufficient importance to be remitted to a sub-committee of the American Railway Engineers' Association Committee on Rail, as well as being under examination by several railways which already have suffered severely in this respect.

The defect has been most commonly encountered in the 131-lb. standard flat-bottom section, though it has been reported in some degree in all sections from 100 lb. upwards. The first manifestation of the trouble is the appearance, on the running surface of the rail near the running edge, of dark spots, which indicate the presence of horizontal planes of separation of the steel within the rail-head; these may occur at a number of different levels in the same rail.

Eventually these horizontal splits spread until pieces of steel are loosened, both on the running surface and on the running edge, and break off. The shelled spots are irregular in size, varying from 1 in. to 6 in. or more in length, from $\frac{1}{4}$ in. to 1 $\frac{1}{2}$ in. in width, and from $\frac{1}{2}$ in. to as much as $\frac{1}{2}$ in. in depth. If the shelled spots are closely spaced, therefore, a very rough condition of the rail surface can be produced; also the cavities may prove the starting-point of cracks which ultimately break the rail. Gauge-corner shelling is at times accompanied by the flaking off of thin layers of steel from the rail surface, though it is not yet proved that the two phenomena are definitely related.

As previously mentioned, the high rails are the worst sufferers, though the defect has been discovered in straight track near the ends of curves. The extent and severity of the shelling varies widely, even over sections of line where track and service conditions do not change. There is no proof that the rails from particular mills are more susceptible than others, nor that top rails from ingots give more trouble than those cut from positions lower down; neither has any connection been traced between the incidence of shelling and chemical composition, though segregation streaks and non-metallic inclusions may act as nuclei for the formation of the cracks.

The view is widely held that the horizontal cracks are fatigue cracks, and one explanation suggested is that the wheels of the higher-speed trains impose an outward rolling action on the running surface of the high rail, whereas those of slower and heavier trains have a similar effect in the opposite direction, these constant reversals of stress causing the ductility of the metal to become exhausted. This explanation in its turn raises the question as to why so little has been heard of this defect until comparatively recently; the answer, it is suggested, has been the introduction of curve lubrication. Prior to lubrication, the high rails of curves wore out

so rapidly that it was necessary to remove them before fatigue had any chance to develop; but the introduction of curve lubrication, it is contended, slowed down wear considerably, and the effects of fatigue, in modern conditions of loading and speed, which grow progressively more severe, then began to show themselves.

It therefore seems clear that the shelling is the result of wheel action on the rail causing failure of the metal, either by direct stress exceeding the elastic limit, or by loss of ductility which is the outcome of constant reversals of stress. Factors which may influence the relative severity of the shelling are the inclination of the rail, the super-elevation, the bearing pressure exerted by the wheels, the radius connecting the flanges and the treads of the wheels, and the radius of the gauge corner of the rail-head.

There are conflicting opinions as to the effect of variations in chemical composition; it is recalled that in 1933 changes were made in the standard rail composition involving slightly lower carbon and higher manganese, and there are still some engineers who think that a higher carbon content is needed to combat this defect; but others contend that the increased toughness of rails with more manganese and silicon is required, and there is little doubt that of the two the latter view is more in accordance with widely-held modern metallurgical opinion. It is also held in some quarters that heat-treatment in conjunction with controlled cooling might be developed in such a way as to give the steel a better resistance to flow.

One railway attributes its comparative immunity to shelling to the fact that it super-elevates its curves to a greater degree than others which have suffered heavily; also it does not employ Mallet articulated locomotives, which are used on a considerable scale by another line on which the shelling trouble has been severe. Curiously enough, on the latter, which is a coal-carrying line, the defect has been almost entirely confined to the tracks over which the loaded trains pass, but is found only to a minor degree in the opposite track, over which the same engines work the trains of empty coal wagons.

It may be added that in the account of gauge-corner shelling which appeared in the March 27 issue of our American contemporary, the *Railway Age*, and from which these particulars are taken, no mention is made of the possible effect of braking; on the line just mentioned, the coal is being worked for the most part on falling grades to the sea for shipment, and there is in all probability considerable braking of the loaded trains, but probably little in the reverse direction. This might have no small effect in the development of the fatigue-producing stresses which result in shelling. It has been found that if shelled rails are transferred from the high to the low rail of a curve, with the shelled edge away from the gauge, they can be kept in service indefinitely; if, however, the rails are transposed, and the low rails replace the high rails, the former also develop the shelled condition. If shelled rails are turned end-for-end, the shelling is found to develop on the opposite side of the head, but this is only to be expected.

To date the Norfolk & Western Railway, which has suffered more severely than any other railway from this defect, has laid in 10,000 tons of new rail to replace rails which had become so badly shelled as to

compel removal, and in a number of cases had fractured in consequence of cracks developing from the shelly spots. This double-track main line carries some of the heaviest traffic in the United States, chiefly coal, in bogie wagons of 50 and 70 tons capacity, which have a weight when fully loaded of about 80 and 100 tons respectively. The heaviest motive power units in use are a number of 2-8-8-2 Mallets with 233 $\frac{1}{2}$ tons adhesion weight, or an average of just over 14 $\frac{1}{2}$ tons on each coupled wheel; these were introduced in 1930, and there are also a number of 2-6-6-4 Mallets, carrying 192 tons on their coupled wheels, or an average of 16 tons on each wheel.

The gauge-corner shelling trouble on the Norfolk & Western is confined almost exclusively to those sections of the main line which carry the heaviest traffic, more particularly the eastbound main track between Williamson, West Virginia, and Norfolk, Virginia, and the westbound main track between Bluefield and Columbus, West Virginia. Some 80 per cent. of the shelling is on a comparatively short length of 212 miles between Portsmouth, Ohio, and Bluefield, which throughout is sharply curved, with curves as severe in places as 12 deg. (7 $\frac{1}{2}$ ch. radius). Editorial comment on the shelling epidemic appears on page 32.

MAXIMUM PRICES OF BOLTS AND NUTS.

—Alterations in the present controlled maximum prices of certain types of bolts and nuts are contained in an Order issued by the Minister of Supply. The price list has been extended to cover some types of aircraft bolts and nuts. Copies of the Order, the Control of Bolts, Nuts, Screws, Screw Studs, Washers & Rivets (No. 2) Order, 1943, which came into force on July 1, may be obtained from H.M. Stationery Office, York House, Kingsway, W.C.2, or through any bookseller, price 1d.

CONSERVATION OF ALLOY.—A new direction issued by the Controller of Iron & Steel to all Alloy Steel Ingot Makers is obtainable from the British Standards Institution (price 6d.), 28, Victoria Street, Westminster, S.W.1. The object of the direction is primarily alloy conservation; although the effect of this direction is to limit the number of compositions available the permitted compositions chosen are for the most part not new. They are practically all steels which have been made for some considerable time and behind the manufacture and use of which is a wealth of experience. For simplification the basis of the new direction, like that of the old, consists of a table showing which steels are permitted for any given range of tensile strength and size. The table shows the steels of the most economical alloy content which will give the desired properties. Among the permitted steels is a new specification En. 100 which is a low nickel-chrome molybdenum steel which should be used to the greatest extent, as this can be made entirely from scrap and is, therefore, particularly economical in alloy usage. Besides En. 100 there are two other new En. specifications to which attention is drawn, En. 101 and 102. These are carbon-manganese steels containing no critical alloys, so are not covered by the direction and may be used freely. They are steels having physical properties for which alloy steel generally has been used hitherto and should find a wide application.

Railway Coaling Plants—I

A detailed survey of the principles and installations involved in fuelling locomotives

By J. Dalziel

RAILWAY coaling plants associated with traffic operation are of two types, those for coaling locomotives and those for loading cargo and bunker coal on to ships. A third class is comprised by plants dealing with power-station coal, but these do not directly affect traffic and their layout is governed mainly by the individual conditions of the site and of the particular power station concerned rather than, as in the case of the other two types, by duty and requirements more or less common respectively to each type. In certain features,

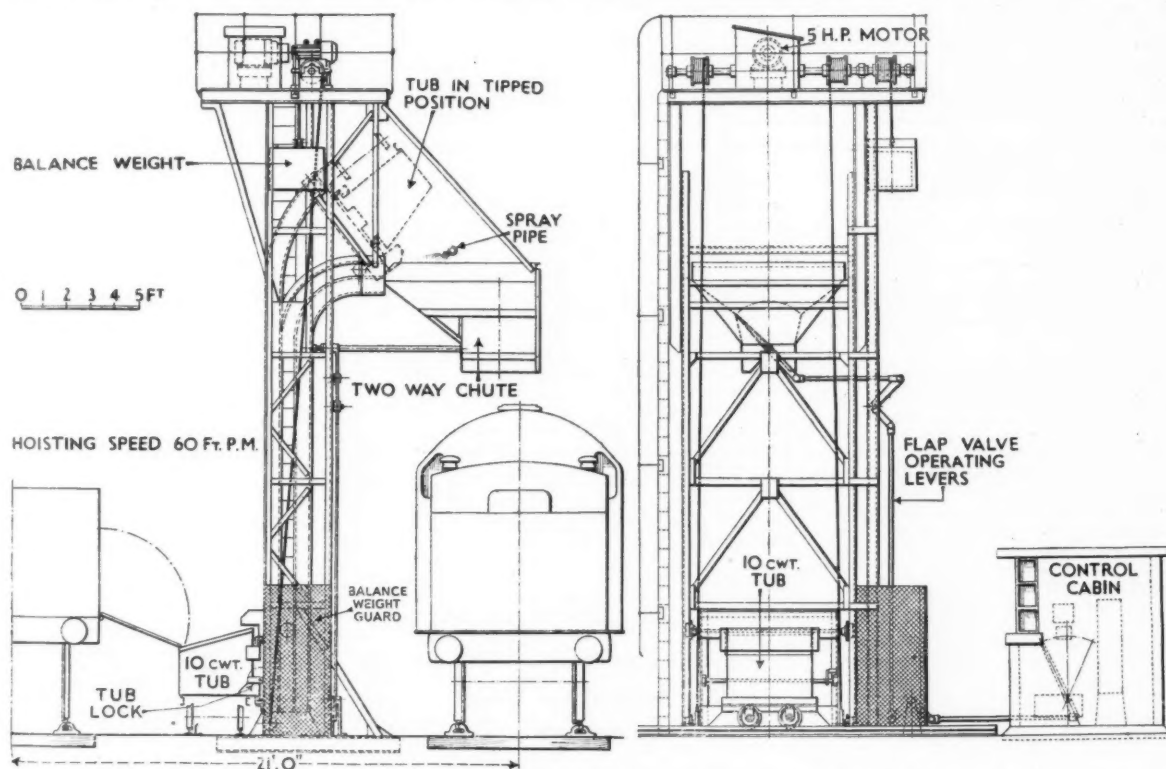
tipplers, for example, are used on both types of plant, designs which have been entirely satisfactory on locomotive plants have failed when applied without modification on cargo loading plants. The failures in some instances have been serious.

Locomotive Coaling

Formerly an appreciable amount of manual labour was used in coaling locomotives; unloading from the wagon was performed by hand generally into small portable wheeled tubs, and in most cases

moved in the one direction only, but in many plants they ran alongside each other with a crossover and points from the full wagon to the empty wagon tracks. At smaller stations, and where the site did not lend itself to the standard high-level coal stage, wheeled tubs were filled from wagons, at ground level and worked to cranes which lifted them over, then tipped them into the tenders.

These arrangements, which necessitated the employment of a large amount of labour, were survivals of earlier days when labour costs were much lower than in recent years and when the attainment of maximum running mileage per locomotive was not considered of the same importance as it is nowadays. Formerly the proportion of spare to running locomotives was accepted as about one-third. Now, with the adoption of more highly-mechanised and speedier



Coaling plant in use at the smaller depots. Manually-filled coal tubs with electric hoist

requirements, and methods of operation, locomotive and cargo-handling plants have points of close resemblance; in other respects they differ widely. Thus, in contrast with locomotive plants, most of which deliver into storage hoppers and all of which deliver finally into tenders of practically non-varying height and shape, cargo-loading plants have to serve ships of widely varying tonnages and designs, with different types and arrangements of holds, unequal hatch dimensions, and a diversity of structural obstructions. They therefore present problems of appreciably greater complexity. Their speed of loading and hourly capacity is in general far higher than that of even very large locomotive coaling plants, and, because this speed affects the detention time of the ships, it is a very important factor.

Because of the higher speed and the greater wear and tear on the various sections of the plant it is not surprising that where the same appliances, wagon

arranged to empty their contents by side or end tipping.

According to "Midland" practice, with which the writer is most familiar, coaling at large stations generally was done in open-sided sheds, termed coal stages, which had ground-level locomotive running tracks on one or both sides—generally passenger one side and goods the other. Inside was a raised platform carrying the full-gauge coal wagons on tracks at roughly the height of the tender; these tracks were served by ramped full and empty roads up and down which the wagons were worked by locomotives. The coal was shovelled into the tubs from the dropped side doors of the wagons; the loaded tubs were run along the sheet-steel or concrete raised floor of the shed, or sometimes on narrow-gauge tracks, and their contents tipped on to the tender. Sometimes a chute was fitted. The approach and departure ramped tracks were frequently on opposite sides of the coal stages proper, so that the wagons

devices for coaling, watering, cleaning, and so on, and with operating and repair methods entailing less time in the shops, the proportion of spare engines has come down to about 10 per cent.

Early Forms of Mechanical Coaling Plants

The first installations in this country of mechanical coaling other than by crane were, the writer believes, those in which a bucket elevator replaced the tub-lifting and tipping crane. The coal was shovelled from the wagons into the boot of the elevator, which delivered it on to the tenders through a chute which was swung clear of the running gauge when not in use. There was such a plant at Slades Green on the former S.E. & C.R. in very early days. This might be considered to be a forerunner of a number of plants used at traffic stations as distinct from the Running Depots where the locomotives are serviced, for topping up tenders to their full capacity

just before the despatch of the locomotive on a long mainline journey. The majority of these do not use bucket elevators but are skip hoist plants wherein a specially-shaped tub loaded at ground level is pulled up a vertical or approximately vertical track by rope and is discharged into the tender by suitable shaping of the track at the top of the travel. The skips are sometimes wheeled in order to be portable and to run on a narrow-gauge track for filling from the main-line drop side-door wagons alongside. The doors rest on the tubs and form a rough-and-ready chute down which the coal is loaded. These plants, of course, are only low-duty plants installed for a special purpose, the fulfilment of which their compact form and convenience of working makes possible.

Mechanical Coaling

It was some 15 or 20 years ago that general mechanisation of auxiliary locomotive services, including coaling, watering, disposal of ashes, and so on, began to be taken in hand seriously. Even earlier, however, in 1910, a pioneer installation of the modern form of plant was erected at

Crewe North. This raised the coal by an elevator into hoppers above the engine-coaling tracks. The elevator was of the tray-conveyor type and the plant was fitted with a crusher to break the coal down to a convenient size. Breakage was not then taken as of much account as it was considered the coal had to be broken before being fired. This is the reverse of requirements nowadays, for although a limited amount of breakage in these plants is accepted as inevitable, any considerable degree of breakage is objected to on account of the loss of small coal and dust which is blown away and because of the liability to segregation, which causes some engines to be supplied with dust and smalls in undue proportion, thus giving rise to working difficulties. The Crewe plant was later converted from a tray conveyor to a skip hoist type which enabled larger coal to be elevated and minimised breakage.

The designs of most, though not all, modern plants comprise a hopper at a sufficient height above rail level to enable coal to be fed through chutes to tenders standing on a coaling track or, in some cases, on two or more tracks. The rated

size of the plant is generally based on the hopper capacity, which in this country varies from 50 to 500 tons. The hoppers are in many cases subdivided, so that passenger-train engines can be supplied with one grade of coal and freight engines with another, and in practically all cases the amount of coal fed to each engine is measured and recorded. Sometimes a third compartment, dealing with coal for shunting engines and the like, is provided, but according to general opinion two compartments are sufficient; each sub-division adds to the complication and expense of the plant. There are great variations in plant arrangement. Storage hoppers are sometimes underground and sometimes of no great capacity; many methods exist for conveying the coal from wagon to storage space and then to tender, and for eliminating breakage.

The Crewe North plant empties the wagons by a rotary tipper, and feeds the tray conveyor and later the skip hoist through a jigger feeder. The various forms of tippers, feeders and other details will be discussed later.

(To be continued)

Accidents on British Railways in 1942

The annual report of the Chief Inspecting Officer of Railways, Ministry of War Transport, issued on July 5, shows that there were remarkably few serious train accidents, notwithstanding an increase of about 20 per cent. in the number of passengers carried, as compared with 1941. The 46 fatalities among passengers, railway servants, and other persons compare with the average of 39 for the 5-year period 1935-39; 28 of them occurred in two accidents. Among passengers the liability to casualty in train accidents was one killed in some 60 millions carried, and with regard to servants the passenger and freight train-miles worked were about 43 millions for each fatality.

There were reported 547 train accidents of all kinds, 233 of which were caused by human failure. The year opened with abnormally cold weather, which imposed great strain on the operating and maintenance staffs, and caused an unusually heavy sick list, but in handling the exceptional traffics, the difficulties resulting from restricted lighting and shortages of power and staff were materially alleviated by a very mild autumn and winter. In the result, and having regard to the complexity of working the intense traffic on the railways of this country, the report gives some indication of the reliability of their operation in the war effort, and shows what a high standard of safety was maintained during 1942.

In accidents connected with the movement of railway vehicles, exclusive of train accidents, 113 passengers were killed as compared with an average of 68 for the 5-year period 1935-39. Of this number 83 occurred in falling from platforms and trains and when entering or alighting from trains, as compared with 81 in 1941 and with the annual average of 53 during 1935-39. It is stated that these accidents were largely due to misadventure or were caused by want of caution on the part of passengers themselves; but blackout continues to be a contributory factor, in spite of warnings and improvements in lighting conditions. Of the total fatalities, 58 occurred during blackout, as compared with 52 in 1941, and restricted lighting was referred to either in the companies' or coroners' reports in 24 cases.

Women employees now total over 100,000 as compared with some 25,000 before the war; they are being increasingly employed on manual work of all kinds, and many are replacing men who are serving with the Forces. They have shown remarkable aptitude for their new duties and are responsive to instruction intended for their personal safety.

Railway servants suffered 284 fatalities, including 4 women, in movement and non-movement accidents, as compared with 314 in 1941 and with the average of 228 for the 5-year period 1935-39. There were 586 serious casualties to servants in the black-out, as compared with 563 in 1941, but fatalities decreased from 85 to 70; of the total, restricted lighting may have contributed to 182 (compared with 201 in 1941). Everything possible is being done to increase efficiency and safety at night within the limits that war conditions prescribe, and it is hoped that improvements in lighting, which have recently been agreed, will be reflected in the figures for 1943.

The Argentine Fuel Situation

According to a statistical analysis of fuel consumption in Argentina, issued by the Instituto de Estudios Económicos del Transporte, supplementary to that published in *The Railway Gazette* of September 11, 1942, the total consumption of all classes of combustibles during 1942 was 10,880,000 tons, as compared with 10,394,000 tons in 1941, an increase of 4.5 per cent., or 12.8 per cent. over 1940, and of 11.3 per cent. over 1939. In the appended table the different fuels have been reduced to an equivalent volume of petroleum, based on their calorific value relative to that of petroleum:—

Fuel consumption in 1942		
Fuel	Equivalent in tons of petroleum	Percentage of total consumed
Petroleum ...	4,456,000	40.9
Wood ...	2,403,000	22.1
Residuary matter ...	1,557,000	14.4
Maize ...	833,000	7.7
Charcoal ...	582,000	5.3
Coal ...	580,000	5.3
Natural gas ...	469,000	4.3
Total ...	10,880,000	100.0

Of the 4,456,000 tons of petroleum consumed, 3,471,000 tons were national pro-

duction, and 985,000 tons were imported. Of the 580,000 tons of coal consumed, 36,000 tons were national production, and 544,000 tons were imported.

As is shown in the appended table, fuel consumption by the Argentine railways has not appreciably varied during the last 10 years:—

Year	Tons	Percentage of total consumption
1933 ...	1,441,000	18.9
1934 ...	1,535,000	18.6
1935 ...	1,564,000	18.3
1936 ...	1,584,000	17.8
1937 ...	1,695,000	18.2
1938 ...	1,583,000	17.2
1939 ...	1,590,000	16.5
1940 ...	1,593,000	16.8
1941* ...	1,779,000	17.1
1942* ...	1,985,000	18.2

* Inclusive of maize consumption

The table below shows the amount of coal, petroleum, and firewood consumed yearly by the Argentine railways since 1938, the last pre-war year:—

	Coal Tons	Petroleum Tons	Firewood Tons	Total Tons
1938 ...	882,000	542,000	159,000	1,583,000
1939 ...	809,000	580,000	195,000	1,580,000
1940 ...	587,000	701,000	305,000	1,593,000
1941 ...	438,000	768,000	573,000	1,779,000
1942 ...	227,000	558,000	1,170,000	1,985,000

The report states that the present abnormal situation makes it difficult to determine with any exactness the existing fuel stocks, more particularly those held by private industrial concerns. It is estimated that the stock of petroleum and by-products in the country on December 31, 1942, was 20 per cent. less than in 1940 (815,000 tons as compared with 1,108,595 tons), and coal stocks had diminished during the same period in a still heavier proportion, amounting to only 614,646 tons, as compared with 1,188,817 tons at the end of 1940. The number of motor vehicles in circulation is estimated at 450,000, representing an annual consumption of 1,282,000,000 litres of petrol.

With a view to disposing of the enormous stocks of unsold maize which had accumulated due to lack of foreign markets, the Argentine Government decided to utilise as much as possible of the unexportable surplus as fuel. The amount consumed for industrial purposes during 1941 was, approximately, 1,000,000 tons, and in 1942 about 2,500,000 tons. The amount of maize fuel consumed by the railways in 1941 was 36,000 tons, and in 1942 about 73,000 tons.

Locomotive Working on the N.W.R., India—I

Some notes on the variously graded main-line broad-gauge sections of the system and the locomotives used on them



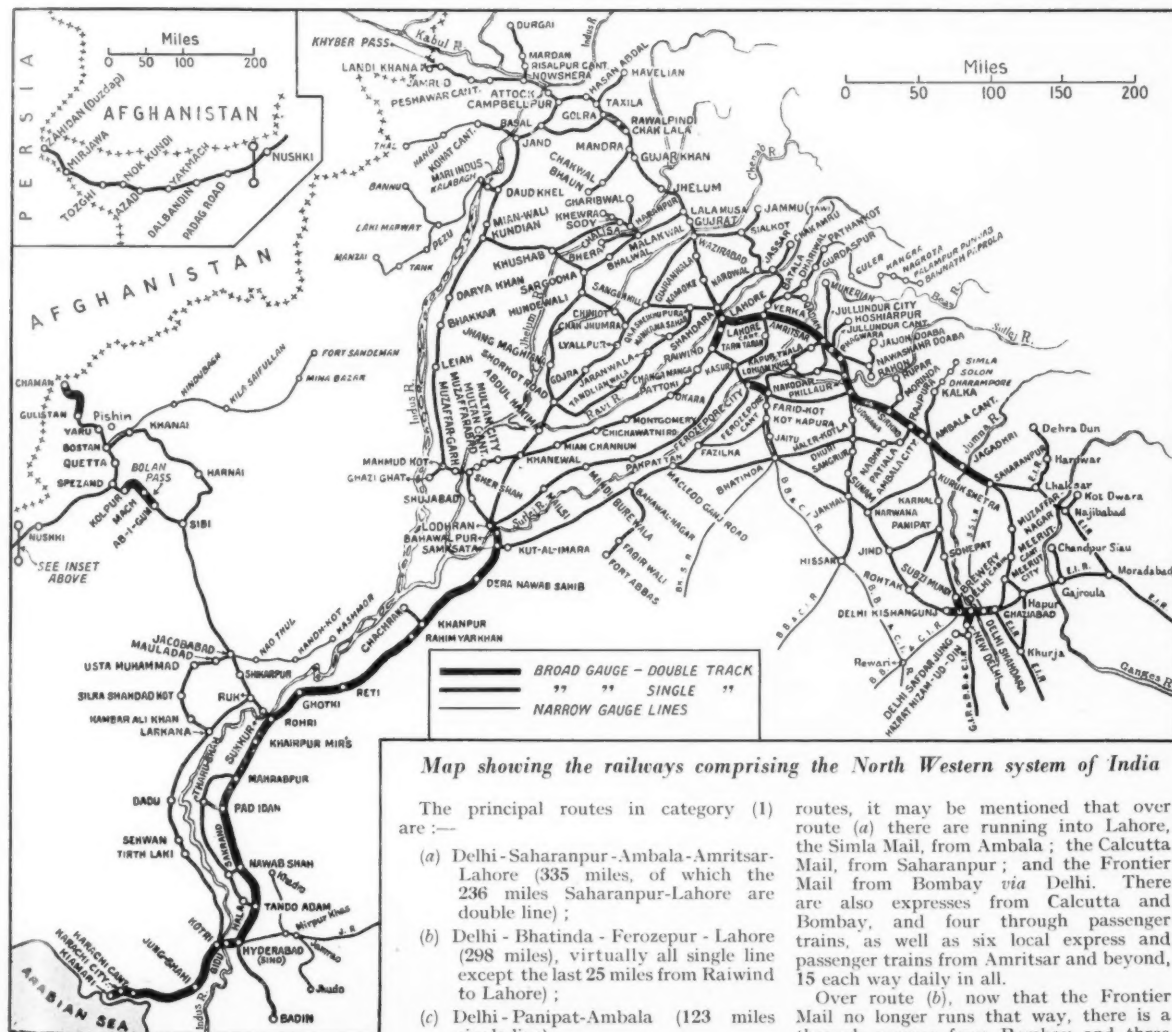
THE more important broad-gauge sections of the Indian North Western system may be divided primarily into three categories for purposes of locomotive working: (1) the great bulk of the system in the plains of the Punjab and Sind south of Lala Musa—on the main line from Lahore to Rawal-

pindi and Peshawar—and south of Sibi in the direction of Quetta; (2) the Lala Musa-Rawalpindi-Peshawar section; and (3) the Sibi-Quetta, Peshawar-Khyber, and Ambala-Kalka sections. The ruling gradients in category (1) are easier than 1 in 100, in (2) 1 in 100, and in (3) 1 in 55 and steeper.

- (d) Karachi - Rohri - Samasata - Khanewal-Lahore (758 miles, of which Karachi-Khanewal, 605 miles, if the Multan loop is considered together with the chord line as providing two tracks, and Raiwind-Lahore, 25 miles, are double);
- (e) Rohri-Sibi (151 miles);
- (f) Samasata-Bhatinda (218 miles); and
- (g) Lahore-Lala Musa (73 miles). Routes (e), (f), and (g) are all single track.

It will be noted that there are three alternative routes from Delhi to Lahore (a), (b), and (c) together with the Ambala-Lahore section of (a). The Calcutta-Punjab and G.I.P.R. Bombay-Punjab mails follow route (a), the Frontier Mail (from Bombay) via the B.B. & C.I.R. runs via route (b) in peacetime, and the mails from Bombay and Calcutta to Kalka and Simla use route (c). Karachi-Lahore mails run via route (d), and the Quetta mails use routes (d) and (e). Through carriages from Karachi to Delhi and vice versa follow route (f), and the Frontier Mail to and from Peshawar runs over route (g). With the exception of the Karachi-Kotri section of route (d), where the ruling grade is 1 in 200, the gradients on all these routes are easier and often negligible.

To give some idea of the daily mail express, and passenger traffic over these



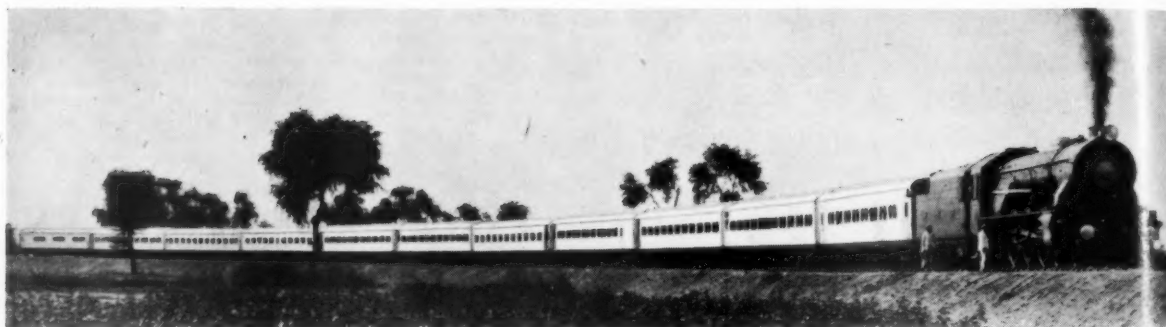
Map showing the railways comprising the North Western system of India

The principal routes in category (1) are:—

- (a) Delhi - Saharanpur - Ambala - Amritsar - Lahore (335 miles, of which the 236 miles Saharanpur-Lahore are double line);
- (b) Delhi - Bhatinda - Ferozepur - Lahore (298 miles), virtually all single line except the last 25 miles from Raiwind to Lahore);
- (c) Delhi - Panipat - Ambala (123 miles single line).

routes, it may be mentioned that over route (a) there are running into Lahore, the Simla Mail, from Ambala; the Calcutta Mail, from Saharanpur; and the Frontier Mail from Bombay via Delhi. There are also expresses from Calcutta and Bombay, and four through passenger trains, as well as six local express and passenger trains from Amritsar and beyond, 15 each way daily in all.

Over route (b), now that the Frontier Mail no longer runs that way, there is a through express from Bombay and three



The Viceregal train headed by an "XC" Pacific locomotive, N.W.R.

through passenger trains. Over route (c) are expresses from Calcutta and Bombay (for Simla) and two through passenger services. Route (d) from Karachi has mails to Lahore and Quetta, the Sind Express and two through passengers daily, in addition to local services over various sections of the route. Though there are through carriages between Lahore and Quetta, the Quetta mail runs from Karachi. Between Lahore and Rawalpindi, *via* route (g), there are one mail, three expresses, and two through passenger services each way daily.

The heaviest passenger trains working in peacetime are over routes (a) and (d), the Karachi mails in particular loading up to nearly 500 tons behind the tender. The two heaviest types of Pacific locomotive,



"XS" class four-cylinder 4-6-2 locomotive on an electrically-operated turntable at Lahore



"SP/S" class locomotive hauling a typical passenger train

the "XS" and "XC" classes, are mainly used. On the other hand, the Frontier Mails over routes (b) (normally) and (g) are comparatively light—as is also the permanent way on (b)—and the much-con-

less important trains over routes (a), (b), (c), and (g), the above and other types of locomotives are used, namely, 4-6-0, "HP/S"; and 4-4-0 "SP/S." The numbers in service and leading dimensions

Class	Type	Cylinders (in.)	Axle load (tons)	Tractive effort at 85 per cent. b.p. (lb.)	No. in service
"XS" ...	4.6.2	(4) 16 × 26	21.5	34,400	4
"XC" ...	4.6.2	(4) 23 × 28	19.8	30,625	28
"WL" ...	4.6.2	(2) 18½ × 28	15.8	25,530	4
"E/I" ...	4.4.2	(4) 20½ × 26	18.6	21,400	40
"HP/S" ...	4.6.0	(4) 20 × 26	17.6	21,925	19
"SP/S" ...	4.4.0	(4) 20 × 26	16.9	19,100	131

* Includes "E/I's" as yet unmodified

verted "E/I" Atlantics, or "E/M's," which were illustrated and described in our issue of September 13, 1940 [p. 279], handle this traffic satisfactorily. Over the other routes in this category and also for working the

of these passenger engines are given in the above table.

In explanation, it may be pointed out that in the various class initials "H" indicates heavy, "S" old standard, "S"

superheated, "M" medium, or modified in the case of the "E" Atlantics, and "X" more recent standard types.

Until a decade or two ago, simple and also De Glehn compound Atlantics were regularly used on the Karachi main line, but these have been scrapped.

The illustrations above show three of these types in service, the "E/I" or "E/M" was illustrated in our issue of September 13, 1940, and the "WL" class was illustrated and described in our issue of July 26, 1940.

(To be continued)

PROPOSED NEW BRAZILIAN RAILWAY.—Plans are stated to be well advanced for the construction of a railway from Joaquim Murtinho to Monte Alegre, a distance of 64 km. (40 miles).

BRITISH STANDARD 1121, PART 1, 1943.—The British Standards Institution has issued this specification, which includes recommended methods for the determination of sulphur, phosphorus and lead in steel. This is the first instalment of a programme of work for the preparation of standard methods for the analysis of steel generally. As sulphur and phosphorus are the two elements which are specified more frequently than any other, attention has been given to them first. Work is being continued on the preparation of methods for the determination of carbon and manganese, and will cover ultimately all alloying elements. The experimental work is being carried out by a committee of the Iron & Steel Institute and very close agreement has been obtained in the results of the various investigators who tried out the methods for sulphur, phosphorus, and lead. Copies of the specification may be obtained from the British Standards Institution, 28, Victoria Street, London, S.W.1.

RAILWAY NEWS SECTION

PERSONAL

RAILWAY RATES TRIBUNAL

Mr. John Quirey, C.B.E., who has been a member of the Railway Rates Tribunal since November 4, 1931, retired on June 30.

Mr. Thomas Evans Argile has been appointed as the member with experience of railway business, with effect from July 1, 1943.

Colonel E. Gore-Browne, Deputy - Chairman, Southern Railway Company, has been elected a member of the London Committee of the Ottoman Bank.

G.W.R. FIRST AID MOVEMENT

Mr. H. Adams Clarke (Chief Staff & Establishment Officer, G.W.R.), has been promoted by the Venerable Order of St. John of Jerusalem from the grade of Serving Brother in the Order to that of Officer. Mr. Adams Clarke is Chairman of the Central Committee of the G.W.R. Centre of the St. John Ambulance Association and Chairman of the G.W.R. Divisional Ambulance Secretaries' Conference.

We regret that, in our last week's issue, Mr. M. A. Cameron was stated to have been appointed Passenger Manager, Scottish Area, L.N.E.R.; this should have read, Acting Passenger Manager, Scottish Area.

The L.N.E.R. announces that Mr. C. J. G. Taylor, Goods Agent, Dewsbury, has been appointed by the Crown Agents for the Colonies as Assistant Traffic Superintendent, Palestine Railways, for the duration of the war.

Mr. Alan S. Bean, Managing Director of United Analyses Limited, of Sunderland, has been appointed Technical Consultant to the coal division of the Ministry of War Transport.

Mr. Daniel Sharpe, Chairman of A. & W. Smith & Co. Ltd., has been elected President of the Institute of British Foundrymen.

We regret to record the death on July 2, at the age of 75, of Sir Robert Gillan, K.C.S.I., who was a member of the Indian Railway Board from 1914 until his retirement in 1920, and was President of the board from 1915 to 1918.

Mr. W. Bramley, Assistant District Locomotive Superintendent, Longsight, L.M.S.R., has been appointed a Technical Assistant, Chief Mechanical Engineer's & Electrical Engineer's Offices, Derby.

Sir John Charles Fox, formerly Senior Master of the Supreme Court, and a Director of the King's Lynn Docks & Railway Company, has left £13,205.

Lt-General Sir John Chappell Ward, D.S.O., formerly Director-General of Navigation at Basra, Iraq, and Director-General of the Iraq State Railways, 1936-39, left £28,601.

Mr. T. E. Argile, Chief Commercial Manager, L.M.S.R., whose retirement is announced, entered the Midland Railway service at Derby in 1896. After spending some time in the Goods and General Manager's offices, he went to Leicester to obtain station experience. In due course he returned to Derby as Private Secretary to the then Chief Goods Manager, the late Mr. Adie, and after-

We regret to record the death of Mr. T. H. Thatcher, Managing Director of the Atlas Preservative Co. Ltd., Erith, Kent, who died in London on June 24, at the age of 57. Mr. Thatcher was born in New Zealand, and was the son of the founder of the Atlas Preservative Co. Ltd. He was a member of the Institute of Marine Engineers, and was well known in shipping and export circles. He was largely responsible for the development of the "Atlas" degreasing process for cleaning ships' heat-exchanging plant.

SOUTH AFRICAN RAILWAY
STAFF CHANGES

Mr. J. C. Ballantine has been appointed Bridge Engineer, Chief Civil Engineer's Office, Johannesburg, vice Mr. J. van Cittert, retired.

Mr. S. M. Mulligan has been appointed Superintendent (Operating), System Manager's Office, Johannesburg.

Mr. H. J. C. Bosman has been appointed Superintendent (Staff Investigation), General Manager's Office, Johannesburg.

Mr. H. Birrell has been appointed System Engineer, Johannesburg.

Mr. J. M. Southey has been appointed Inspecting Engineer (New Works), Johannesburg.

Mr. W. A. Doble has been appointed Expenditure Accountant, Johannesburg.

Mr. J. van Cittert, whose retirement is announced above, was born in Holland and took his Diploma of Civil Engineering at Ghent University in 1908. He was elected a Member of the Institute of Belgian Engineers in 1910, and joined the South African Railways as a temporary Assistant Engineer at Headquarters in the following year. In 1915 he took his M.Sc. degree in Engineering. After wide experience in survey and construction work, he was promoted to be District Engineer at Headquarters in 1931, and became Assistant Bridge Engineer in 1937. It was in 1939 that Mr. van Cittert was appointed Bridge Engineer, the position from which he has just retired under the age limit.

INDIAN RAILWAY STAFF CHANGE

Mr. K. C. Chandhari has been appointed to officiate as Deputy Chief Accounts Officer, N.W.R., as from September 16.

Mr. Kenelm Kerr, O.B.E., Assistant General Manager (Staff), L.N.E.R., who, as recorded in our June 25 issue, has taken charge of all staff questions, including those connected with the managing and clerical staff, previously handled by Mr. R. Bell, who retired from the position of Assistant General Manager on May 31, was educated at Merchant Taylors' School and Trinity College, Cambridge. He entered the Civil Service in 1904, and in 1910 became Principal Private Secretary to the Postmaster-General. In 1912 he was appointed Assistant to General Manager, North Eastern Railway, for staff and labour matters.



Mr. T. E. Argile

Chief Commercial Manager, L.M.S.R., 1938-43, who has been appointed a member of the Railway Rates Tribunal

wards was transferred to general inspector's work in the Derby district. In 1910, Mr. Argile was selected to undertake general station revision work all over the late Midland system. Shortly afterwards he was appointed Assistant to the Outdoor Goods Manager, and in 1914 went to Swansea as South Wales Traffic Superintendent. In 1919, he transferred to Leeds as District Goods Manager, and in 1923 became Assistant to the Chief General Superintendent of the L.M.S.R. for goods operating work. In May, 1925, Mr. Argile was appointed District Goods Manager at Leeds to amalgamate the three constituent companies' districts into one district; he became District Goods Manager at Liverpool in the same year. In January, 1928, he was appointed Goods Manager, Northern Division. He was appointed Assistant Chief Goods Manager, Euston, in 1931, and Assistant Chief Commercial Manager in 1932. In 1938 he was appointed Chief Commercial Manager. As from July 1, Mr. Argile has been appointed as the member with experience of railway business of the Railway Rates Tribunal.

and Secretary (company's side) of the North Eastern Railway Conciliation Conference. Between 1919 and 1921 Mr. Kerr was a member of various London committees concerned in negotiating the national settlement, and served on the negotiating sub-committee of General Managers. He was a member of the Central Wages Board as originally constituted in 1920 and as re-constituted in 1921. He became Passenger Manager, North Eastern Railway, in 1922, and Assistant General Manager (Staff), London & North Eastern Railway, on the amalgamation. In 1923 he also became a member of the Railways Staff Conference and in 1926 was appointed a member of the National Wages Board. Mr. Kerr is

Eastern Area. In January this year Mr. Cameron was appointed Assistant to the Chief General Manager (Works).

Mr. O. H. Corble, Assistant to the Chief General Manager, L.N.E.R., who, as recorded in our issue of June 25, has been appointed Assistant General Manager (Ancillary Services), was educated at Bancroft's School, Woodford, and entered the service of the Great Northern Railway in 1908 in the Secretary's Department, in which he reached the position of Chief Clerk in 1921. Shortly after the amalgamation he was transferred to the Chief General Manager's office of the L.N.E.R. to assist Sir

member of the council of the recently-formed Public Transport Association; he had served on the council of the former Omnibus Owners' Association since 1932.

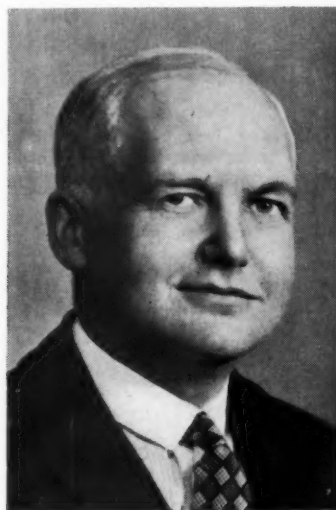
Mr. C. P. Hopkins, Rates & Statistics Assistant to the Chief General Manager, L.N.E.R., who, as recorded in our June 25 issue, has been appointed Assistant to the Chief General Manager, entered the service of the former North Eastern Railway in 1916. He gained experience in various District Goods Departments, and was appointed Traffic Apprentice in 1921. After a period of special training he joined the staff of the Freight Rolling Stock Controller, L.N.E.R.; he held the positions of Inspector in 1927



Mr. Kenelm Kerr
Assistant General Manager (Staff), L.N.E.R., who takes charge of all staff questions

Chairman of the Special Joint Committee in respect of machinery of negotiation for railway staff, and is a member of the R.E.C. Staff Committee, Railway Staff Conference, Railway Shopmen's National Council, National Railway Electrical Council, Railway Police Central Conference, Railway Workshop Supervisory Staff National Council, and of the Council and General Purposes Committee, British Employers' Confederation.

Mr. T. F. Cameron, Assistant to the Chief General Manager (Works), L.N.E.R., who, as recorded in our June 25 issue, has been appointed Assistant General Manager (Works & General), was born in 1890 and was educated at George Watson's College and the University of Edinburgh. He joined the former North Eastern Railway as a traffic apprentice in 1912, and, after serving with the Directorate of Light Railways in France, was demobilised with the rank of Major, R.E. In 1926 he became Mineral Traffic Controller, Hull; and in 1929 he was appointed Dock Superintendent, Tyne Dock. He was made Assistant District Goods Manager, Newcastle-on-Tyne, in 1931, and two years later he became Assistant District Superintendent there. In 1934, Mr. Cameron was appointed Staff Assistant to the Superintendent, York, and in 1935 he became Assistant to the Divisional General Manager, North Eastern Area. In 1936 he was appointed Assistant Divisional General Manager, North



Mr. O. H. Corble
Appointed Assistant General Manager (Ancillary Services), L.N.E.R.

Alexander Kaye Butterworth in an investigation into the superannuation and pension funds of the group. At a later stage Mr. Corble took a prominent part in the formation of the L.N.E.R. superannuation fund and is now one of the company's representatives on the committee of that fund. In September, 1924, he became head of the Salaried Staff Section of the office, in which position he acted as Secretary of the company's side of Sectional Council No. 1. Mr. Corble was appointed Assistant District Goods Manager, Newcastle, in 1928, and Assistant to Goods Manager, North Eastern Area, L.N.E.R., in November, 1929, which position he held until April, 1932, when he was appointed Assistant to the Chief General Manager & Industrial Agent. He is a Director of the Scottish Motor Traction Co. Ltd. and subsidiary companies, East Midland Motor Services Limited, Northern General Transport Co. Ltd., Eastern Counties Omnibus Co. Ltd., East Yorkshire Motor Services Limited, North Western Road Car Co. Ltd., West Yorkshire Road Car Co. Ltd., and Railway Air Services Limited. He is also an alternate Director of Carter, Paterson & Co. Ltd., and of Hay's Wharf Cartage Co. Ltd. He is Secretary of the Superintending Committee of the locomotive testing station (L.M.S.R. and L.N.E.R.) and was appointed to succeed Mr. R. Bell on the managing committee of the Railway Research Service in June last. He is Chairman of the L.N.E.R. Post-War Development Committee, and is a



Mr. C. P. Hopkins
Appointed Assistant to the Chief General Manager, L.N.E.R.

and Chief Supervisory Clerk in 1929. He was appointed Traffic Assistant to the Continental Traffic Manager, London, in 1932, and in 1937 became General Assistant to the Superintendent, Eastern Section. In 1939 he was appointed Staff Assistant to the Superintendent, Southern Area. He was appointed Assistant Freight Rolling Stock Controller, York, in 1941, and later in the same year became Assistant Rolling Stock Controller. He was appointed Rates & Statistics Assistant to the Chief General Manager in December, 1942.

Mr. Seán Lemass continues to hold the offices of Minister for Supplies and Minister for Industry & Commerce in the new Eire Cabinet.

Mr. H. L. Currie has been appointed Office Engineer of the Canadian National Railways at Montreal. Mr. Currie was formerly in charge of grade separation, and he succeeds Mr. J. A. Heaman, who has retired after 42 years of service in the engineering department of the company.

Mr. Sidney Garcke, C.B.E., M.I.Mech.E., has joined the boards of Eastwoods Limited; Eastwoods Cement Limited; Eastwoods Humber Cement Limited; Eastwoods Lewes Cement Limited; and Eastwoods Flettons Limited. These appointments are in consequence of the recent deaths of Sir Henry Maybury and Sir Horace Boot.

TRANSPORT SERVICES AND THE WAR—197

Lighting in Road Vehicles

The improved lighting arrangements in London Transport trolleybuses and trams are now practically complete. The interior lighting in nearly three-quarters of the bus fleet has also been increased, and the remainder should be altered well before the time when homeward journeys coincide with the blackout. The task has involved modifications to 36,750 shades on trolleybuses, fitting 7,200 additional shades on trams, and changing 130,000 bulbs in buses. The lighting of the platforms and destination panels will also be increased.

Discouraging Non-Essential Travel

A new restriction to discourage non-essential travel on buses in Northumberland, Durham, and the North Riding is to come into force on Monday, August 9. Sir John Maxwell, the North Regional Transport Commissioner, announced on June 30 that all ordinary return tickets on bus services in the region will be withdrawn, except those of a value of 10d. and less, and those above 10d. value which provide for travel from places in rural districts to and from the nearest main shopping centre. The variations will be notified to the public by the public service operators in due course. Rates for 12-journey tickets and monthly contract tickets will not be affected. This action is aimed at restricting longer distance road journeys in order to free buses for travellers making essential journeys. At the same time, existing facilities are being retained for housewives in rural districts to travel to and from their nearest shopping centre without increased charge.

Sunday Travel in Italy

An order has been issued that all bus and trolleybus services in Italy are to be suspended on Sundays as from July 4.

Canadian Built Locomotives for India

Canadian locomotive building plants have begun the manufacture of 145 military locomotives for the Government of India, according to a statement made by the Hon. C. D. Howe, Canadian Minister

of Munitions & Supply, to the Dominion House of Commons.

French Railway Sabotage

Algiers Radio announced on June 28 that French patriots had blown up the railways between Bordeaux and Paris and between Tarascon and Sette.

The Sudan Railways in Wartime

As the Sudan Railways occupy a vital place in the transport system of the Middle East, comparatively little information about their wartime activities has been issued, but recently the improvement in the state of affairs in Africa, both before and after clearing the Axis from that continent, has justified some information being given in the form of broadcasts from the Khartoum and Omdurman radio stations. From these we have been able to extract some interesting items. For example, we learn that the Sudan Railways have begun to build the bodies of railway carriages and that they plan in future to build the steel underframes of their rolling stock. They have built several types of wagon, and hope to continue to do so after the war. A major problem caused by the war was that of fuel. Before 1939 the railways burned 130,000 tons of coal a year. Paucity of ships and attendant risks made it unlikely that supplies could be maintained. Fortunately there is a wealth of timber close to the railway, and the Agriculture & Forests Department formulated a scheme to produce up to 50,000 tons a year of charcoal briquettes for engine fuel, the Railway Department turning out machinery for the job. A more pretentious undertaking was that of building a reservoir at Port Sudan without using steel reinforcement. The railway copied the old Roman method and used a vaulted roof construction of concrete brick. The reservoir fulfils another important piece of wartime work in supplying water in badly-provided areas where rainfall has fallen below the average. Many other examples of the versatility of the railway department have been cited,

ranging from the provision of eight large copper drums for the Emperor of Ethiopia's triumphal entry into his capital to furnishing underwear for the Free French nurses.

A.R.P. on Indian Railways

The annual Report on Indian Railways for the financial year ended March 31, 1942, records that an Air Raid Precautions Organisation has been formed on the railways for keeping trains running and preventing and dealing with damage and casualties within railway premises. Railway administrations were authorised to constitute railway A.R.P. services for any railway area under their control and for such other areas, not being railway areas, as may be agreed upon between the Provincial Government and the Railway Administration. The A.R.P. organisation on railways is similar to that constituted in the adjacent non-railway areas, and arrangements have been made for close co-operation, and for mutual assistance between the two organisations, should the necessity arise. In addition to the A.R.P. measures which are taken by railways in towns which have been classified by the Central Government, the railways have also taken measures in other railway installations and areas which are important for railway operation. A.R.P. measures have been taken in all those railway workshops which are employed on war work.

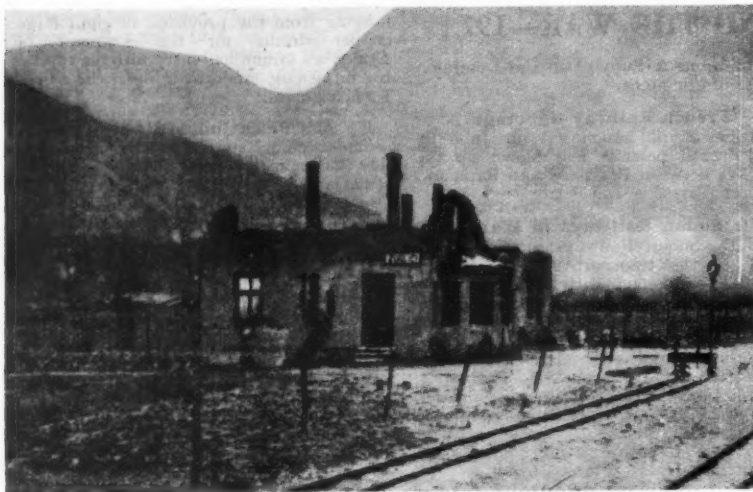
The railway A.R.P. services are recruited mainly from railway servants who perform A.R.P. work in addition to their railway duties, but certain additional staff for full-time A.R.P. duties have been appointed as found necessary. In addition to the provision of structural precautions for the protection of personnel and valuable plant, etc., the A.R.P. measures consist of the organisation and training of the following services:—

- (a) Wardens.
- (b) Casualty.
- (c) Rescue.
- (d) Fire-Watching and Stirrup Pump Party.
- (e) Fire-Fighting.
- (f) Communications.
- (g) Anti-Gas and Decontamination.
- (h) Bomb Reconnaissance and Confirmation.

The Railway Board of the Government of India authorised the payment to part-



British-built 2-8-0 austerity locomotive No. 7001 at work in Scotland, hauling a freight train on the L.N.E.R. between Sighthill and Singer. The view was taken on February 6, 1943



The remains of a station building in southern Croatia after it had been wrecked and burned by patriots

time members of the railway A.R.P. services of an allowance equivalent to about 10 per cent. of their pay to cover out-of-pocket expenses. Small numbers of railway personnel were trained in the various branches of A.R.P. work at the schools opened by the Civil Defence Department of the Government of India and by Provincial Governments. The personnel so trained imparted knowledge to the personnel of the railway A.R.P. services in schools run by the railways, and helped to organise railway A.R.P. services. Most of the A.R.P. equipment required by railways has been obtained through the Central Government.

Railways in Greece

The Morocco radio reported on June 28 that Greek patriots had caused substantial landslides in the Tempe Valley, removed the rails over a long section of the Athens-Salonika railway, and had blown up several railway bridges in Macedonia. Under the control of the occupation authorities, the Hellenic State Railways were said, by April last, to have in-

creased to 12 trains daily the service between Athens and Salonika, and were expected to increase this number to 16 by the beginning of the present month. It seems that the position has altered subsequently as the result of patriot activities, and this line, which is the only railway link between Southern Greece and the rest of Europe, is expected to be out of action for a considerable time. It is thus worthy of record that on this vital Axis supply route efforts have been made previously to convey the maximum amount of traffic which a single-line railway can handle.

On the section from Larissa to Salonika, no construction took place; but on the portion between Salonika and Guevghele (the Serbian frontier), German-style signals were installed, and these are to be used also on the section from Salonika to Athens and the Piræus. Various new railway stations have been completed, and others are under construction at points along the line. Changes were made to

provide sidings of a minimum of 550 to 570 metres in length, or long enough to take trains of 2 locomotives and 50 vehicles, totalling 650 to 700 tons, at stations on the line. Much of this was difficult, for in some places it was necessary to blast out solid rock. The Gorgopotamos bridge, destroyed in November, was restored to commission early in January. Metal sections and supports were replaced by wooden ones, each section 20 metres long. Salonika, the German-Italian base, is now a network of railways, as in the last war; at two stations there are 19 tracks each capable of accommodating 2 trains of 100 vehicles.

Rule-of-the-Road in Latin America

The Trans-Isthmian Highway was opened to unrestricted traffic in Panama on April 15. On that date the practice of driving motor vehicles on the left-hand side of the road was abolished. It is expected that the completion of the Inter-American Highway will result in the standardisation of the right-hand rule-of-the-road throughout Latin America. Already, this is in use in the vast majority of places in the New World. The left-hand rule-of-the-road (as in Great Britain) has survived in some territories heretofore isolated from the U.S.A., etc., by the absence of through roads.

New Mexican Air Line

A new air service was established about two months ago by the Compañía Mexicana de Aviación, between Mexico City and Tapachula (near the border of Guatemala), via Oaxaca and Ixtepec. The aircraft carry ten passengers, and the service is operated thrice weekly. All the places concerned are near or on the Pan-American Highway, which at present is uncompleted over this section. This new transport facility supplements the improved railway connections between Mexico and Guatemala to which reference has already been made in our columns. In addition, it provides a link between Oaxaca and Ixtepec, where there is no railway. Reference to the map in our March 5 issue (page 240) shows that Oaxaca is on the narrow-gauge railway system south of Mexico City, and that Ixtepec is the junction on the standard-gauge Tehuantepec Railway where the line to the frontier of Guatemala diverges from the main trans-isthmian line.

Use of the Alcan Highway

Mr. Mackenzie King, Prime Minister of Canada, has announced that no civilian will be permitted on the Alcan Highway without a permit. Requests for permission to travel along the military highway to Alaska are being received in considerable numbers by both the Canadian and the United States authorities. Most of these requests come from persons who have no essential reason for visiting the North-West at the present time. There are now no facilities along most of the highway for ordinary civilian traffic. For sleeping accommodation, food, petrol, and repairs, such travellers would have to rely on assistance from the military authorities. Every non-essential traveller who has to be assisted in such ways interferes with the primary work of the military authorities, namely, the completion and operation of the highway for war purposes. In these circumstances, the authorities have decided that no civilian traffic will be allowed on the Alcan Highway, excepting that of persons whose presence in the area will contribute to the prosecution of the war. A joint control unit is being established in Edmonton, and this will be given authority to issue permits to applicants who have legitimate reasons for wishing to travel on the highway.

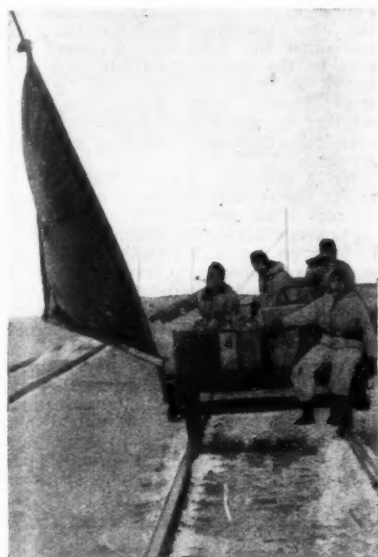


View reproduced from a German-controlled newspaper showing a bridge in Serbia which was blown up by local patriots to interrupt German lines of communication. As this bridge provided a link between two tunnels, substantial dislocation was caused

Sail Power

Press reports last November stated that the first modern road vehicle with a sail had appeared in Paris. It is said to reach a speed of 30 m.p.h. in favourable circumstances, and to have cycle pedals for use when the wind fails. The vehicle will carry three passengers.

There are far greater possibilities of using wind power on railways, and the prevailing world scarcity of fuel has directed attention to this in various places. Because of petrol shortage, the Chilean nitrate miners are using the regular desert winds to transport them between their coastal homes and the inland mines, as we recorded briefly in our January 1 issue, page 18. Rail trollies have been equipped with sails, and avail themselves of the north Chilean desert wind that blows from the Pacific to the Andes



German military use of sail power on the Russian front



Wind-propelled trolley used on the Jamnagar & Dwarka Railway (India) on the Okhamandel coast

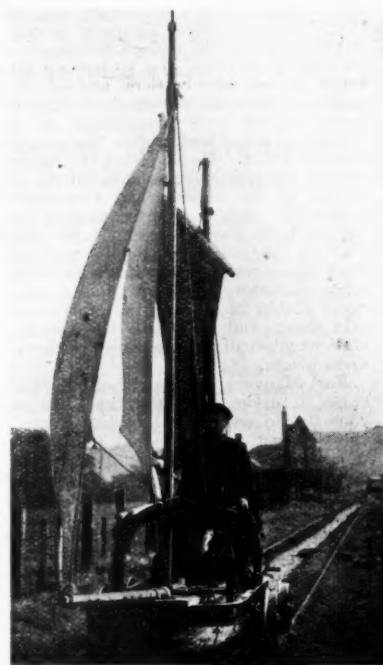
at dawn, and from the Andes to the ocean at sunset. One of our pictures shows a typical trip.

On the Russian front, the Germans have resorted to wind power to take supplies by rail. It is silent; does not consume valuable fuel; and is not vulnerable to air attack.

Another view, taken quite recently, shows a sail-propelled trolley used on the metre-gauge Jamnagar & Dwarka Railway, in India. By reason of the high winds prevailing on the Okhamandel coast, this vehicle is able to cover the 12 miles between Dwarka and Okha port in about half an hour.

A further illustration shows a sail-propelled trolley used by lifeboatmen for traversing the Spurn Head Railway, an isolated line extending from Spurn Head,

a lonely outpost at the foot of the strip of land known as the Spit of Yorkshire, and running as far as the village of Kilnsea. A similar example of the use of wind-power on a British railway near the coast is provided by another picture showing a retired naval officer who, in pre-war days, had to travel five miles to light the riverside lamps at Cliffe, Kent. He fitted a sail to an old quarry truck chassis for traversing the 3-ft. gauge line of a disused quarry railway, and claimed that in favourable circumstances he travelled at speeds as high as 30 knots, which is 34½ m.p.h., as the Admiralty knot is 6,080 ft. against 5,280 ft. in the statute mile.



Sail propulsion on a private quarry railway at Cliffe, Kent



Above: Sail-propelled trolley used by lifeboatmen for traversing the Spurn Head Railway, Yorkshire

Left: Wartime use of windpower by Chilean nitrate miners, in view of petrol shortage

Parliamentary Notes

Grand Union Canal Bill

The Grand Union Canal Bill was read the Third time, and passed, with Amendments, in the House of Commons on June 29.

The Amendments made to the Bill by the House of Commons were considered by the House of Lords on June 30 and agreed to.

Signposts and Station Names

Lord Mottistone in the House of Lords on June 30 asked the Government whether it would instruct the Ministry of War Transport, in consultation with the War Office, to restore signposts throughout the country, to replace the names on all railway stations, and to remove tank traps, barbed wire barriers, and all other purely defensive obstructions to the enemy which were inapplicable to the present situation and were a hindrance to the war effort. He said that the restoration of signposts would make all the difference to the military and Government traffic that was constantly passing over our roads by day and night. He hoped that all the railway stations would have their names restored. It was not common sense to restore all the signposts except those within 20 miles of the coast in certain areas, and to restore the names of stations gradually and not restore them in some places.

Earl Manvers joined with Lord Mottistone in urging that the time had now come to do away with the last traces of the well-justified alarm that they all felt in the summer of 1940.

Lord Geddes said that areas where it was almost inconceivable that at this stage of the war even a single parachutist would be likely to drop were left without their signposts. He knew that in certain parts the signposts were returning, but they had got miles and miles of ditches as tank obstructions that would seem to him much more likely to prevent the movement of our own tanks than to interfere in any way with the tanks that might arrive in this country now with German crews.

Lord Croft (Joint Under Secretary of State for War) assured Lord Mottistone that the matters which he had brought before the House were matters to which the Government had already given very careful thought and upon which it was taking action all the time. It had been decided that a very large measure of relaxation of the existing ban on the erection of signposts might be permitted. For reasons of security it was not proposed to publish details of the areas within which the re-erection of signposts was allowed or prohibited. He could assure Lord Mottistone that the area over which the signposts would be restored was extensive and amounted in all to a very large part of the area in which the erection of signposts had hitherto been prohibited. The necessary instructions were being issued to the highway and other authorities concerned. As to the replacement of names of all railway stations, he said that throughout the county of London the station nameplates were allowed and throughout the whole country names on signal boxes up to 6 in. lettering were also allowed. Names under station roofs, where they were invisible from the air or a public road were permitted, and names on platforms in the open, with lettering up to 3 in. were permitted, provided they could not be seen and understood from a highway. In towns or built-up areas,

with certain exceptions where, for military reasons, the relaxation was considered to be undesirable, station names up to 6 in. lettering were permitted on platforms at railway stations. The House would appreciate that different considerations applied to names on stations from those which applied to direction posts. Names of stations were generally in much bigger lettering and they could in many cases be read from the air. The Government fully appreciated, and indeed was in agreement with the desire that no restriction of this kind should be retained any longer than was necessary, but it had come to the conclusion that at the present time, for security reasons, it would not be desirable to go further than the relaxations already made. Those relaxations were considerable, and they did as much as could be done to meet the convenience of passengers within the limitations which the Government still thought necessary for security reasons.

Director of Alternative Motor Fuels, with headquarters in London. His salary as Regional Transport Commissioner is £1,500 a year; he receives no additional salary for his work as Director of Alternative Motor Fuels.

Sir D. Thomson: Is the Minister in effect saying that the Director of Alternative Motor Fuels has not a full-time job?

Mr. Noel-Baker: No, Sir. I am saying that for the present—the matter is to be reviewed in two months' time—it is desirable to keep Sir Alfred Faulkner in contact with alternative fuels in view of the special knowledge of the work he has already done.

Bus Facilities for Workers

Mr. Ivor Thomas (Keighley—Lab.) on June 30 asked the Parliamentary Secretary to the Ministry of War Transport whether he was aware that the withdrawal of unlimited travel facilities by the West Yorkshire Road Car Co. Ltd. and other bus operators, increased the cost to the workers without curtailing travel, as most journeys made by contract tickets were unavoidable; and whether he would issue instructions that some other method of curtailing was to be sought.

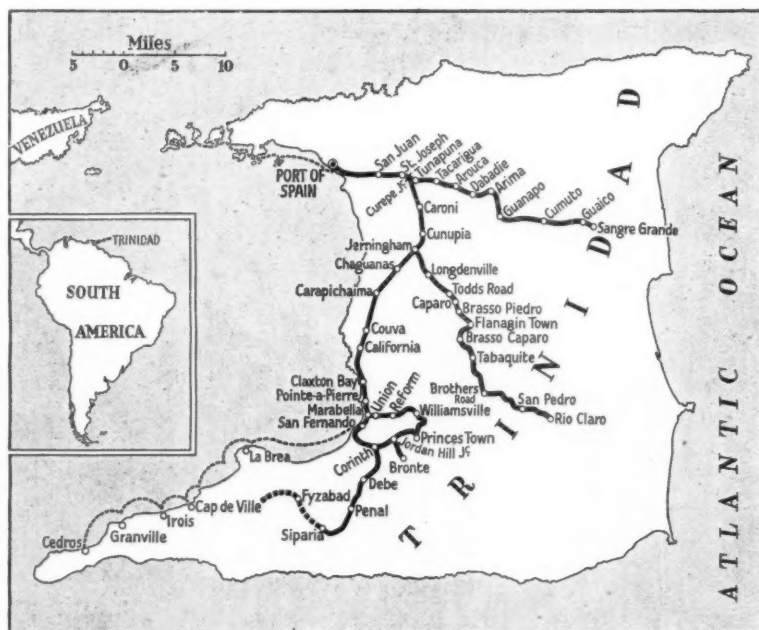
Mr. Noel-Baker: I regret that I cannot accept the assumptions made by Mr. Ivor Thomas in his question. The withdrawal of tickets allowing an unlimited number of journeys has undoubtedly reduced the amount of unnecessary travel and has, I believe, done so without causing any avoidable hardship. In the area to which Mr. Ivor Thomas refers, multiple journey tickets or daily workmen's return tickets have been substituted for unlimited travel tickets. They are available on the outward journey up to 9 a.m. and are also provided for Sunday and night-shift workers. Some workmen's tickets are cheaper and are available till a later hour than they were before. Similarly, for

Questions in Parliament

Eastern Regional Transport Commissioner

Sir Douglas Thomson (Aberdeen South—C.) on June 29 asked the Parliamentary Secretary to the Ministry of War Transport (1) who had been appointed Regional Transport Commissioner for the Eastern Region; at what salary; and from where did he carry out this work; and (2) who was now acting as Director of Alternative Motor Fuels; at what salary; and where the department was situated.

Mr. P. J. Noel-Baker (Joint Parliamentary Secretary, Ministry of War Transport): Sir Alfred Faulkner has been appointed Regional Transport Commissioner for the Eastern Region, with headquarters at Cambridge. Sir Alfred Faulkner is also continuing to act for the present as



Sketch map of the Trinidad Government Railways, showing the proposed 6½-mile extension from Siparia to the Trinidad Leaseholds Forest reserve, surveyed shortly before the war (see editorial note, page 30)

some tickets which allow six return journeys a week, the fare is less, and in others where there is an increase, the amount of the increase is very small.

Mr. Thomas: Is the Parliamentary Secretary aware that the implication of his statement is that workmen will take their meals in restaurants instead of at home, thus throwing a burden on the Ministry of Food, and, further, is he aware that this step has caused great indignation as has been shown by the many petitions and resolutions of councils?

Mr. Noel-Baker: I regret that we have had to make similar arrangements in many different parts of the country. They have caused a certain amount of inconvenience to begin with, but they were accepted as being necessary in the national interest.

Mr. R. H. Turton (Thirsk & Malton—C.): Will the Parliamentary Secretary reconsider this matter to see that workers are not charged more under the new conditions, and are able to go back in the middle of the day?

Mr. Noel-Baker: As I have explained, in some cases workers are being charged less. Where the charge is higher it is only a very little higher, and I think that on the whole it has come out extremely well.

Mr. T. Levy (Elland—C.): Is the Parliamentary Secretary satisfied that facilities are adequate, especially in the Elland Division, where they are all cross-country and there is no real sectional transport road?

Mr. Noel-Baker: The definition of the word "adequate" varies according to what Mr. Levy has in mind. Unfortunately, we have to do the best we can with our limited resources, and we have to hold the balance equally between the different areas.

Mr. Turton: Is the Parliamentary Secretary aware that some workers are paying 16 guineas a year more under the new travel system?

Mr. Noel-Baker: If Mr. Turton will submit such cases to me, I will examine them.

Channel Tunnel

Mr. W. W. Wakefield (Swindon—C.) on June 30 asked the Parliamentary Secretary to the Ministry of War Transport if, in view of the success of the Mersey Tunnel, he had now made plans for tunnelling under the Channel in order that, after the war, easy access for road and rail traffic might be made available between this country and the Continent.

Mr. Noel-Baker: No new scheme for a Channel Tunnel is at present in preparation.

Mr. Wakefield: Will the Parliamentary Secretary reconsider his answer in view of the fact that employment results when there are easy communications and access to trade? In making plans for the future, is not this an important consideration?

Mr. Noel-Baker: I do not want to express an opinion on the merits of the Channel Tunnel, in favour of which I have spoken in the past, but no new plans can be made except in co-operation with the authorities who rule on the other side of the Channel, and it is premature to hope that the present authorities will give it their help.

Professor D. L. Savory (Belfast University—C.): Would it not be advisable to give priority of a tunnel between Scotland and Northern Ireland, of which the distance would be 19 miles only, say, between Portpatrick and Donaghadee?

There was no reply.

Staff and Labour Matters

Railway Shopmen

A further meeting of the Railway Shopmen's National Council was held in London on June 25, in connection with the unions' claim for an increase of 10s. a week, but it was not possible to reach agreement.

In response to a request to the Railway Executive Committee from the employees' side of the Railway Shopmen's National Council, a further meeting was held in London on Friday, July 2, in connection with the claim of the trade unions for an increase of 10s. a week in the wages of railway shopmen. After discussion it was agreed that a further meeting of the Railway Shopmen's National Council should be held.

L.P.T.B. Workshop Staff

The Arbitration Tribunal for the London Passenger Transport Board's shop wages staff, under the chairmanship of Sir John Forster, has recently issued its award on a claim by the Electrical Trades Union, Amalgamated Engineering Union, and the National Union of Railwaymen, for an increase in the wages of the skilled, semi-skilled and unskilled shop staff employed in the Signal Overhaul Shop, the Cable Section, the Ticket-Machine Section, the Lighting Section of the Signal Department, and the Lifts & Escalators Section of the Mechanical Engineering Department, to bring them up to the level of the shop staff employed at Acton Works.

The tribunal awarded that the special bonuses payable to the workmen covered by the claim shall be increased to the amounts given below for a 47-hr. week:—

		Shop wages staff		
		Skilled	Semi-skilled	Unskilled
		s.	s.	s. d.
Lift & Escalators Section...		16	12	10 0
Signal Dept. Signal Overhaul Shop		16	12	10 0
Signal Dept. Signal Lighting Section		13	10	8 6
Cable Section		13	10	8 6
Ticket-Machine Section		11	9	7 6

Civil Servants' War Bonus

The war bonus of civil servants was increased as from June 1 by agreement of the Civil Service National Whitley Council and the salary limit beyond which bonus was not hitherto paid is raised from £500 to £850 a year.

Below is given the revised bonus:—

Age	Weekly
Under 16	5s.
16	5s. 6d.
17	6s.
18	8s. 6d.
19	9s. 6d.
20	10s. 6d.
21 and over	

Salary up to and including £250—
Men 17s. 6d. a week.
Women 13s. 6d. a week.

Salary over £250 and up to £500—
Men 14s. a week.
Women 11s. 6d. a week.

Salary over £500 and up to and including £850—
Men £25 a year.
Women £20 a year.

A.E.U. Annual Conference

The annual conference of the Amalgamated Engineering Union was held at Southport on June 21 and was opened by Mr. Jack Tanner, who, in his presidential address, referred to moves for a fusion of the British Employers' Confederation and the Federation of British Industries, which, he said, would result in an organisation

which would be the opposite number of the Trades Union Congress. He outlined in his address the programme of the union, both immediately and in the future.

The conference formulated a wages programme, which included:—Consolidation of national bonuses; establishment of national minimum wage rates for all classes of workers; the application of the recent award of the National Arbitration Tribunal to all timeworkers; equal pay for equal work and a minimum wage for adult women, not less than that of the male labourer; restoration of the pre-1931 conditions in regard to overtime and Sunday work; and improvement of the proportion of adult earnings paid to apprentices. The conference also instructed its Executive Council to enter into negotiations for a 40-hr. week as a peacetime maximum, without reduction of wages.

Buenos Aires Transport Corporation

The report on the working of the corporation during 1942, of which brief details were given in our last week's issue, showed a deficit to December 31 of \$11,421,332, compared with \$12,353,785 in 1941. Of this sum, \$1,613,862 corresponds to the actual working deficit; the balance of \$9,807,470 represents the provision for renewals. In 1941, the working deficit was \$3,092,709. Receipts amounted to \$69,476,786, and working expenses totalled \$71,090,647. The total number of passengers carried was 702,207,883, as compared with 596,078,108 in 1941, an increase of 106,129,775, or 17.8 per cent. This increase over 1941 is partly due to the absorption into the corporation during 1942 of a number of bus lines formerly worked as private concerns. Also, during the last four months of 1941 the *colectivo* services were almost completely paralysed by a prolonged strike. The figures relating to these vehicles for that year have been omitted from the appended table.

System	Passengers carried	
	1942	1941
Tramways	431,319,071	380,818,463
Underground lines	145,107,295	124,408,259
Buses	95,484,073	90,851,386
Micro-buses and colectivos	30,297,444	—
	702,207,883	596,078,108

During the past year 10 new *colectivos*, 282 micro-buses of various types and 31 buses have been incorporated into the service. Due to the war, the corporation has been unable to obtain delivery of a large quantity of additional new equipment and spare parts, ordered in the United States, and in view of the difficulty of obtaining new rolling stock from abroad, the reconstruction of a number of vehicles is being carried out with a view to increasing their seating capacity. The report stated that the corporation's proposals for higher tariffs, submitted to the Control Board some time ago, were still under study by that body in conjunction with the Minister of the Interior.

SWEDISH PRIVATELY-OWNED RAILWAYS.

—The combined revenue of the Swedish private railway companies during March totalled kr. 14 million, compared with kr. 11.6 million for the same month last year. As expenses increased from kr. 9.4 million to kr. 10.1 million, there remained a surplus of kr. 3.9 million (against kr. 2.2 million). The net profit for March amounted to kr. 2 million (against kr. 0.4 million).

Notes and News

Kendall & Gent (1920) Limited.—Interim dividend 5 per cent., less tax (same).

Peter Brotherhood Limited.—A final dividend of 12 per cent. is recommended, making 20 per cent. for the year (same).

Buenos Ayres Western Moratorium Extended.—By extraordinary resolutions of holders of the 4 per cent. and 5 per cent. debenture stocks and of the 5 per cent. three-year secured notes in the Buenos Ayres Western Railway Limited, the moratorium period in the scheme of arrangement sanctioned on July 7, 1941, has been extended until June 30, 1944.

Havana Terminal Railroad Debentures.—Interest due on July 1, 1943, on the Havana Terminal Railroad 5 per cent. debentures and debenture stock was paid on that date by J. Henry Schröder & Co. In accordance with the revised sinking fund schedule, debentures amounting to £26,800 nominal have been purchased and have been withdrawn from circulation as from July 1.

Safety Exhibition.—From September 3 to 10 the Royal Society for the Prevention of Accidents is to hold a Safety Training (Child Safety) Exhibition in London, which Mr. P. J. Noel-Baker (Parliamentary Secretary, Ministry of War Transport) will open. The exhibition is based on information contained in the Society's Road Accident Bulletin (No. 15) dealing with fatal accidents to children.

Austrian Locomotive and Wagon Control Change.—The Vienna locomotive and wagon building works, Simmering-Graz-Pauker A.G. für Maschinen-, Kessel- und Waggonbau now belonging to the Reichswerke A.G. für Waffen- und Maschinenbau "Hermann Göring," is shortly to be taken over by Klöckner-Humboldt-Deutz A.G. of Cologne. The Vienna firm was formed in 1941 through amalgamation between the Simmering Maschinen- und Waggonbau A.G., the Grazer Maschinen- und Waggonbau A.G., and the Paukerwerk A.G. of Graz.

F.B.I. and British Employers Confederation Merger Proposal.—It is reported that as a result of discussions between the Federation of British Industries and the British Employers' Confederation steps are to be taken to effect an amalgamation of the two bodies. If a merger should be effected, there would be an "F.B.I." branch to deal with trade and commerce and a "B.E.C." branch to look after labour problems. This is the present division of activities between the two organisations. It is stated that the move for the amalgamation is prompted by the desire to have one body to speak for industry when trade and industrial problems are dealt with after the war.

Dunlop Rubber Co. Ltd.—Sir J. George Beharrell, D.S.O., presiding at the 44th ordinary general meeting of this company, said that the net profit for the year 1942 amounted to £2,433,000 compared with £3,186,000 for 1941. The decline in profits was due to a curtailment of business because of regulations, and also to the lower margin of profit on the greatly increased proportion of business for the Allied Governments. The provision for United Kingdom E.P.T. this year was estimated at £827,000, which brought the total provision made in the parent company for United Kingdom E.P.T. up to December 31, 1942, to £4,294,000 and for the Dunlop group of companies to £5,923,000. The board had again allocated £100,000 to contingencies reserve, and a dividend on the ordinary

stock of 8 per cent. was recommended. The aggregate profits of the parent company and all subsidiaries for 1942 amounted to £4,472,000, against £5,185,000 for 1941. The board would continue to co-operate with the Government in all measures to secure the strictest economy in the usage of rubber. Assistance had been given to other manufacturers in order to increase the supply of products which were urgently required. In these and other ways the company's technical resources had been of great value to the nation.

Canadian Pacific Railway.—Gross earnings for May, 1943, amounted to \$24,205,000, an increase of \$2,683,000 in comparison with May, 1942. The working expenses of \$19,892,000 were \$2,604,000 higher, and the net earnings of \$4,313,000 showed an improvement of \$79,000. Aggregate gross earnings from January 1 to May 31, 1943, were \$111,533,000, an advance of \$11,745,000, but the net earnings of \$16,781,000 were \$993,000 lower than for the corresponding period of 1942.

"Red Cap" Wages.—We learn from a Canadian correspondent that "Red Caps" (coloured station porters) employed by the Canadian Pacific Railway at its Montreal, Quebec, and Toronto termini, and at the Toronto Union Station, have applied for wage increases. Similar steps have been taken by the bellboys (pages) at the C.P.R. hotel, the Royal York, in Toronto. The applications have been submitted to the National War Labour Board.

Paris Metro in 1942.—The Compagnie du Chemin de Fer Métropolitain de Paris showed a net profit for 1942 of fr. 43,537,000 against fr. 36,281,000 in 1941. Including the amount brought forward, the sum of fr. 45,670,000 (fr. 36,340,000) was available for distribution, and a dividend of fr. 67.50 (fr. 60) on each capital share was paid—27 per cent. against 24 per cent. Bonus shares earned a dividend of 24 per cent. compared with 21 per cent. in 1941. The balance sheet for the end of 1942 showed liabilities of fr. 1,050,000,000 (fr. 458,570,000), but liquid assets were fr. 770,390,000, against fr. 646,430,000.

San Paulo Railway Rate Increase.—At the annual meeting of the San Paulo (Brazilian) Railway Co. Ltd. on June 29, Mr. George M. Booth, the Chairman, uttered a warning that the latest authorised increase in rates was rather stiff and might have an adverse effect on receipts. If traffics were maintained, however, the new rates, which come into force on July 5, would give an increase of £250,000 a year in gross receipts, he said. He would not prophesy that expenses would not continue to rise. On the subject of taxation, he pointed out that the increased taxation consequent on recent Court decisions amounted to about £100,000 a year. Thus legislation passed in recent years tended largely to nullify the terms of the company's contract with the Brazilian Government.

Glasgow Corporation Transport.—The statement on the revenue and expenditure of the Glasgow Corporation Transport Department for the year ended May 31, 1943, which has been submitted to the Transport Committee of the Corporation, shows a new high revenue level in all three sections—tramways, buses, and underground. Tramway revenue was £3,132,869, against £2,985,318 for the previous year; bus revenue rose from £1,107,493 to £1,182,163; and underground revenue from £175,457 to £190,937; total revenue was £4,505,969, as against £4,263,268. The total excess of revenue over expenditure

was £80,294. Passengers carried by the combined services numbered 724,500,000, as compared with 686,000,000 for the previous year, although the mileage run was reduced from 54,500,000 to 53,000,000.

Ribble Motor Services Limited.—For the year ended March 31, 1943, this company, which is controlled by the L.M.S.R. and B.E.T. Omnibus Services Limited, secured a total revenue of £2,062,526 (£2,047,711). After deducting all expenses including £175,000 (£200,000) for reserve for depreciation and renewals, and £495,000 (£489,601) provision for taxation, there remains a balance of £135,895 (£139,150).

British and Irish Railway Stocks and Shares

Stocks	Highest 1942	Lowest 1942	Prices	
			July 2, 1943	Rise/ Fall
G.W.R.				
Cons. Ord.	58	39	62½	+ 1
5% Cons. Pref.	115½	105½	113	—
5% Red. Pref. (1950)	109½	103½	108	—
5% Rt. Charge	133½	123½	125½	— 2
5% Cons. Guar.	130½	121½	124½	—
4% Deb.	117	105	108½	— 1
4% Deb.	118	108	111½	—
4% Deb.	125	113	118½	—
5% Deb.	137	127	129	— 2
2½ Deb.	77	70	75½	— ½
L.M.S.R.				
Ord.	28½	16½	33½	+ 1
4% Pref. (1923)	63½	50½	62½	—
4% Pref.	76½	67½	76	—
5% Red. Pref. (1955)	103½	94½	103½	—
4% Guar.	104½	97½	100	—
4% Deb.	108½	101½	104	—
5% Red. Deb. (1952)	111	107½	109½	—
L.N.E.R.				
5% Pref. Ord.	9½	2½	10½	—
Def. Ord.	5	1½	4½	—
4% First. Pref.	62	49½	62½	—
4% Second. Pref.	32½	18½	35½	+ 1
5% Red. Pref. (1955)	95½	79	97½	—
4% First. Guar.	98	88	97½	—
4% Second. Guar.	90	78	89½	—
3% Deb.	85	76	79½	+ ½
4% Deb.	106½	100½	102½	—
4% Deb.	106	103	104	—
5% Red. Deb. (1947)	106	102½	105½	—
4% Sinking Fund Red. Deb.	106	102½	105½	—
SOUTHERN				
Pref. Ord.	77	61½	76	+ 1
Def. Ord.	23½	14½	25½	+ 1
5% Pref.	112½	104	111½	—
5% Red. Pref. (1964)	110½	105½	112½	—
5% Guar. Pref.	131	121½	124½	—
5% Red. Guar. Pref. (1957)	115½	109½	114½	—
4% Deb.	116	104½	107	—
5% Deb.	134	125½	129½	—
4% Red. Deb. (1962- 67)	110½	106	107½	—
4% Red. Deb. (1970- 80)	111	106½	107½	—
FORTH BRIDGE				
4% Deb.	109½	108	106½	—
4% Guar.	105½	100	104½	—
L.P.T.B.				
4½% "A"	122½	111	116½	—
5% "A"	131½	122	126½	—
3% Guar. (1967-72)	95½	97½	99	—
5% "B"	121	111½	115½	— 1
"C"	56½	38	61½	—
MERSEY				
Ord.	27½	20½	31	—
3% Perp. Pref.	61½	56½	61	—
4% Perp. Deb.	102½	99½	104	—
3% Perp. Deb.	80½	76	79	—
IRELAND				
BELFAST & C.D.				
Ord.	9	4	9	—
G. NORTHERN				
Ord.	29½	12½	18	—
G. SOUTHERN				
Ord.	25	10	10	—
Pref.	29	12½	14	—
Guar.	53	35½	28½	—
Deb.	71½	55½	53	—

§ ex-dividend

OFFICIAL NOTICES

South Africa

POST War Development in South Africa opens great opportunity for Manufacturers in Great Britain and America.

A British Company with ample finance and having been established in South Africa for over 40 years, with Branches and Depots at Johannesburg, Durban, Port Elizabeth and Cape Town, and whose Clientele

includes the South African Railways, South African Harbours and Ships, City and Municipal Councils, Mining Companies, Building and Public Works Contractors, is prepared to consider the representation of Firms manufacturing Railway Rolling Stock and Equipment, Road Construction Plant, Builders' Supplies, Road Transport Vehicles, Mining Supplies, Timber Supplies and any articles of an engineering or building description, as well as Stores and Materials used by the above Consumers. Apply in first instance to Box 186, c/o The Railway Gazette.

Now on Sale

Universal Directory of Railway Officials and Railway Year Book

48th Annual Edition, 1942-43

Price 20/- net.

THE DIRECTORY PUBLISHING CO., LTD.,
33, Tothill Street, Westminster, S.W.1

which, added to £75,127 brought forward makes a total of £211,022 (£208,127). The preference dividend absorbs £13,000, and the dividend of 10 per cent. for the year on the ordinary shares again takes £120,000, leaving £78,022 to be carried forward.

Welsh Associated Collieries Limited.

—At the annual general meeting to be held on July 21 next the directors will recommend that the following payments be made:—Dividends of 2½ per cent. actual, less income tax at 10s. in the £, on the £1,250,000 5½ per cent. cumulative preference stock for the half-year to June 30, 1943; 4½ per cent. actual, less income tax at 10s. in the £, on the £1,831,457 4½ per cent. preferred ordinary stock for the year ended March 31, 1943; 2 per cent. actual, less income tax at 10s. in the £, on the £5,078,016 ordinary stock for the year ended March 31, 1943. Payment to be made on July 31, 1943.

Powell Duffryn Associated Collieries Limited.

—The board has decided to submit the following recommendations at the annual general meeting to be held on July 21 next:—A dividend of 2½ per cent. actual, less income tax at 10s. in the £, on the £3,500,000 4½ per cent. cumulative preference stock for the half-year to June 30, 1943, payment to be made on July 31, 1943, to holders registered on the books of the company at the close of business on July 13, 1943. Final distribution for the year ended March 31, 1943, of £235,000 (making a total distribution for the year of £325,000) to be divided between the Powell Duffryn Steam Coal Co. Ltd. and Welsh Associated Collieries Limited in the appropriate proportions.

Powell Duffryn Steam Coal Co. Ltd.

—The directors announce that at the annual general meeting to be held on July 21 next they will recommend that the following payments be made:—Final dividends for the year ended March 31, 1943, of 3 per cent. actual, less income tax at 10s. in the £, on the 6 per cent. preference shares of £5 each, and on the 6 per cent. second preference shares of £1 each; 2½ per cent. actual, less income tax at 10s. in the £, on the 5 per cent. preferred ordinary stock; 6 per cent. actual, less income tax at 10s. in the £, on the ordinary stock (making 7½ per cent. for the year). Payment is to be made on July 31, 1943, to holders registered on the books of the company at the close of business on July 13, 1943.

Eastern Counties Omnibus Co. Ltd.

—This company is a subsidiary of the L.N.E.R. and L.M.S.R. companies and of Tilling Motor Services Limited. Revenue for the year to March 31, 1943, amounted to £679,576 (£663,141). Deductions from revenue for duty and licences were £94,600 (£95,529), for depreciation £53,539 (£68,200), for income tax and E.P.T. £378,020 (£420,000), and £75,000 (nil) for deferred maintenance reserve. Other charges reduced the net profit to £69,115 (£64,003), and the balance brought forward was £50,055, making £119,070. Dividend on the ordinary shares for the year is again 6 per cent., tax free, and £12,146 (nil) is

transferred to general reserve, leaving £51,664 to be carried forward.

Further Escalator for Bank Station.

To meet the needs of traffic at the Bank Station, Central Line, London Transport, a second escalator is to be installed. It is proposed to transfer one of the three escalators from Chancery Lane Station, where the volume of traffic does not at present justify so many. A fixed stairway will replace the escalator removed.

British Export Policy.

—Sir Malcolm Robertson, Conservative M.P. for Mitcham, President of the British Council, and formerly Ambassador at Buenos Aires, in a recent address to a meeting arranged by the British & Latin-American Chambers of Commerce, said that, in productive capacity, engineering, managerial, and working effort this nation was second to none. We did not study sufficiently our markets; trade would increase and benefit as we began to understand the requirements of other countries, and to sympathise with their aims, objects, and ideals.

Sentinel Waggon Works (1936)

—For the year to July 31, 1942 gross profits amounted to £109,820, (£94,121) after charging A.R.P. expenditure, etc. Taxation takes £73,132 (£61,066) including £15,000 from general reserve and after providing for interest, fees, etc., there is a net profit of £18,465 (£6,972). The amount brought in was £12,001 (£7,729), making £30,466. A sum of £15,000 is appropriated to reserve, and after providing for the preference dividend for the year to December 31, 1942, £12,766 is carried forward.

The Largest Italian Private Railway.

—The largest privately-owned railway system in Italy, with an aggregate route length of 575 miles, is owned by the Soc. Italiana per le Strade Ferrate del Mediterraneo. Most of it is in the mountain region within the triangle bound by Naples, Bari, and Reggio Calabria. The following is a list of the company's lines in this area, which are of 3 ft. 1½ in. gauge:—

	Route miles
Lagonegro to Spezzano Albanese ...	91
Atena to Marsico-Nuovo ...	25
Vibo Valentia to Mileto ...	17
Cosenza to Pedace and Camigliatello Bianchi ...	36
Pedace to Catanzaro Marina ...	66
Marina Gioioso to Mammola ...	9
Soverato to Chiaravalle Calabria ...	17
Bari to Altamura and Potenza ...	91
Altamura to Matera and Montalbano Jonico ...	58
Avigliano Città to Potenza Inferiore and Laurenzana ...	49*
Crotone Città to Pettilia Policastro ...	25
Gioia Tauro to Citanova Cinquefrondi ...	20
	504

* Of which 9 miles between Avigliano Lucania and Potenza Inferiore are in common with the State Railway line from Foggia to Potenza Inferiore

In addition, in Tuscany, the railway company owns the following standard-gauge lines:—

	Route miles
Umbertide to Perugia San Giovanni and Terni ...	67
Link from Perugia San Giovanni to Perugia (connecting with State Railways) ...	4
	71

According to the company's report for 1942, new lines are under construction,

but no indication is given as to their whereabouts. A map of the railways of Italy was published in our April 2 issue, page 358.

Chloride Electrical Storage Co. Ltd.

—After providing for E.P.T., the profit for the year to March 31, 1943, was £519,806 (£437,071), and the net profit after deducting fees and £225,000 (£125,000) for income tax provision, amounting in all to £289,806 (£306,398), and £111,477 (£83,104) was brought in. Allocations included £25,000 (£75,000) to general reserve, £26,000 (same) to employees' funds, and £20,000 (£10,000) to pensions fund for employees of subsidiaries. The final dividend of 5 per cent. on the "A" and "B" ordinary shares, again makes 10 per cent. for the year, and the bonus of 5 per cent. is repeated, leaving £163,258 to go forward.

Contracts and Tenders

Below is given a list of orders placed recently by the Egyptian State Railways:—

Joseph Steel & Sons Ltd.: Locomotive spares, springs.
George Turton Platts & Co. Ltd.: Buffers.
P. & W. Maclellan Limited: Round bars, etc.
John Spencer & Sons (1928) Ltd.: Volute springs, steel helical springs, locomotive spares.
T.N. Stores: Tyres, sheets, etc.
Ransome & Marles Bearing Co. Ltd.: Ball bearings.
Thomas Bolton & Sons Ltd.: Copper bars.
Skefko Ball Bearing Co. Ltd.: Ball bearings.
Caprotti Valve Gears Limited: Ball bearings.
Hoffmann Manufacturing Co. Ltd.: Steel and brass balls.
Steel, Peech & Tozer Branch of the United Steel Companies Ltd.: Special steel for tools, dies, and springs.
Morgan Crucible Co. Ltd.: Carbon brushes.
British Insulated Cables Limited: Wire.
A. T. Cooper & Co.: Diamond tools.
Wellington Tube Works Limited: Point rodding.
Ibbotson Bros. & Co. Ltd.: Locomotive spares.
D. G. McCorquodale: Telegraph rolls.
George Salter & Co. Ltd.: Springs.
Ruston & Hornsby Limited: Spares for diesel pumping sets.
Ericsson Telephones Limited: T. & T. materials.
Grimshaw, Baxter & J. J. Elliott Limited: Glasses for signalling clocks.
Westinghouse Brake & Signal Co. Ltd.: Signalling materials.
Standard Telephones & Cables Limited: Lever keys.
Babcock & Wilcox Limited: Boiler spares.
Bullers Limited: Insulators.
Tyer & Co. Ltd.: Contacts.
Davies & Metcalfe Limited: Cones.
English Electric Co. Ltd.: Porcelain insulators.
Pritchett & Gold & E.P.S. Co. Ltd.: Cell.
General Electric Co. Ltd.: Tester.

The Netherlands Railways have announced that 11 of the latest type of 4-car electric units will be ordered immediately. These are stated to be destined ultimately to replace the oldest electric rolling stock, which has been in service on the Rotterdam-Hague-Scheveningen line since 1907.

Railway Stock Market

Activity in Stock Exchange markets has centred less on speculative types of securities, such as mining shares, and the general trend in high-class investment stocks was better. Following the completion of the "Wings for Victory" campaign, activity in British Funds has been inclined to increase. In fact, the volume of business in most sections of the Stock Exchange has tended to improve at the time of writing, and with very little selling in evidence, there was a disposition for market values to respond readily even to very moderate increase in demand. The better trend was reflected in home railway securities, and on balance further small gains have been recorded in the junior stocks. Although the view prevails that interim dividend decisions are likely to be the same as a year ago, buyers appear to be attracted by the generous yields. Great Western ordinary returns over 7½ per cent. at the current price on the basis of last year's 4½ per cent. dividend; L.M.S.R. ordinary virtually 7½ per cent. on last year's 2½ per cent. dividend; and Southern deferred 7 per cent. on the 1½ per cent. payment for 1942. The yield on London Transport "C" which paid 3 per cent. last year, is little more than 4½ per cent. The relatively small yield on the latter does not indicate hopes of an increased payment (income in this case is also limited by the terms of the financial agreement), but is due to the view that there should be scope for good improvement in the dividend after the

war. Much may, of course, depend on post-war decisions as to the organisation of transport; but in regard to London Transport the assumption is that any future developments are unlikely to involve any important change in capital structure. As mentioned in these notes on previous occasions, Southern deferred shows a smaller yield than L.M.S.R. and Great Western ordinary mainly because Southern deferred tends to attract speculative attention as the smallest-priced home railway stock in the dividend list. Preference stocks, of course, also give generous yields, those on L.M.S.R. 1923 preference and on L.N.E.R. first preference being nearly 6½ per cent., while L.N.E.R. second preference returns nearly 7½ per cent., L.M.S.R. senior preference 5½ per cent., and Southern preferred over 6½ per cent. Moreover, there is a yield of not far short of 4½ per cent. on L.N.E.R. 4 per cent. second guaranteed. This has an attractive appearance when judged in relation to the investment merits of this stock, and the fact that dividends on home railway stocks can be regarded as being virtually guaranteed by the Government so long as the financial agreement is in operation.

Compared with a week ago, Great Western ordinary has rallied from 62 to 63 at the time of writing; moreover, the 5 per cent. preference was maintained at 113, and the 4 per cent. debentures at 108½. L.M.S.R. ordinary rose to 33½ and continued to attract attention on the

possibility that it might be decided to make an interim payment on this occasion; the senior preference was fractionally higher at 76½, and the 1923 preference kept at 62½ and the guaranteed stock was quoted at par. In accordance with the general tendency, L.N.E.R. stocks had a more active appearance, but best prices were not held by the preferred and deferred stocks, earlier gains in which tended to attract profit-taking at the time of writing. L.N.E.R. second preference, however, remained in favour, and on balance recorded further improvement from 34½ to 35½; the first preference was better at 62½, and at the time of writing the first and second guaranteed have remained at 97½ and 89½ respectively. Southern deferred moved up to 25½, compared with 24½ a week ago; the preferred further improved from 75 to 76. London Transport "C" was 62½, compared with 61½ a week ago.

Argentine railway stocks showed only small movements on balance, pending improvement in demand; sentiment tended to be assisted by the fact that recent gains in values were followed by no heavy selling. Elsewhere, San Paulo ordinary was a point down at 60 on the cautious nature of the statements at the annual meeting. Leopoldina debentures were 55. Elsewhere, among French railway bonds, Nord were inclined to improve. Canadian Pacific tended to be influenced by the upward trend in expenses indicated by the monthly earnings statements, but later rallied on news of the decision to redeem the 4½ per cent. bonds.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ending	Traffic for week		No. of Weeks	Aggregate traffic to date			Shares or stock	Prices							
			Total this year	Inc. or dec. compared with 1941/2		Totals		Increase or decrease		Highest 1942	Lowest 1942	July 2, 1943	Yield % (See Note)				
						1942/3	1941/2										
South & Central America	Antofagasta (Chili) & Bolivia	834	27.6.43	£ 22,800	+	£ 90	25	£ 698,140	£ 550,880	+	£ 147,260	Ord. Stk.	14 6 3/4	7 1/2	14	Nil	
	Argentine North Eastern ...	753	26.6.43	14,016	+	342	52	652,146	573,942	+	78,204	6 p.c. Deb.	19 1/2	10	20 1/2	Nil	
	Bolivar ...	174	May, 1943	5,665	+	1,060	20	27,546	23,063	+	4,483	Bonds	20 1/2	9	22	Nil	
	Brazil ...	2,807	26.6.43	81,000	+	18,900	52	5,128,380	4,548,960	+	579,420	Ord. Stk.	7 1/2	4	6 1/2	Nil	
	Buenos Ayres & Pacific	5,080	26.6.43	124,500	+	720	52	8,264,940	7,556,460	+	708,480	Ord. Stk.	12 1/2	7 1/2	12 1/2	Nil	
	Buenos Ayres Great Southern	1,930	26.6.43	51,420	+	13,860	52	2,794,082	2,713,800	+	80,280	Ord. Stk.	12 1/2	6	12	Nil	
	Buenos Ayres Western	3,700	26.6.43	98,928	+	21,297	52	6,748,401	5,513,862	+	1,234,539	Ord. Stk.	9 1/2	4 1/2	9	Nil	
	Central Argentine ...	972	26.6.43	29,302	+	10,827	52	1,557,088	1,338,808	+	218,280	Ord. Stk.	8 1/2	4	6 1/2	Nil	
	Do.	262	May, 1943	22,861	+	7,210	41	173,827	228,220	+	54,393	Ord. Stk.	16 1/2	11	14	Nil	
	Cent. Uruguay of M. Video...	70	19.6.43	21,939	+	6,057	20	98,259	63,546	+	34,713	1 Mt. Db.	90 1/2	89	93 1/2	6 1/2	
	Entre Rios ...	808	26.6.43	16,494	+	894	52	923,394	814,056	+	109,338	Ord. Stk.	33	4 1/2	7	Nil	
	Great Western of Brazil	1,030	26.6.43	12,300	+	3,200	25	395,700	256,700	+	139,000	Ord. Sh.	9 1/2	—	57 1/2	—	
	International of Cl. Amer. ...	794	May, 1943	£ 646,832	+	£ 885,592	20	£ 3,312,644	£ 3,159,152	+	£ 153,492	1st Pref.	1 1/2	5 1/3	2	Nil	
	Interoceanic of Mexico	22 1/2	19.6.43	9,520	+	3,555	22	45,395	32,135	+	13,260	5 p.c. Deb.	11 1/2	5	8 3/4	Nil	
	La Guaira & Caracas...	1,918	26.6.43	38,757	+	9,350	25	832,365	753,712	+	78,653	Ord. Stk.	6 1/2	3 1/2	6	Nil	
	Leopoldina ...	483	21.6.43	ps. 420,400	+	ps. 115,200	23	ps. 9,084,000	ps. 8,350,100	+	ps. 733,900	Ord. Stk.	1	—	1 1/2	Nil	
	Midland Uruguay ...	319	Apr., 1943	17,124	+	2,741	40	152,738	137,510	+	15,228	Ord. Stk.	77 1/2	3 1/2	80 1/2	Nil	
	Nitrate ...	382	15.6.43	4,601	+	3,257	23	66,640	71,624	+	4,984	Ord. Sh.	—	—	—	Nil	
	Paraguay Central ...	274	25.6.43	\$2,812,000	+	\$1,401,000	52	\$212,609,000	\$185,424,000	+	\$27,185,000	Pr. Li. Stk.	53	40	51 1/2	11 1/2	
	Peruvian Corporation	1,059	May, 1943	92,939	+	11,934	44	940,331	833,448	+	106,883	Pref.	19 1/2	5 1/2	15	Nil	
	Salvador ...	100	Mar., 1943	c 140,000	+	c 14,000	38	c 912,000	c 782,172	+	c 29,828	Ord. Stk.	59	41	60 1/2	3 1/2	
	San Paulo ...	153 1/2	20.6.43	47,817	+	9,289	25	950,857	889,482	+	61,375	Ord. Stk.	41 1/2	23 1/2	32 1/2	6 1/2	
	Taitai ...	160	May, 1943	2,390	+	3,100	25	46,206	49,710	+	3,504	Ord. Sh.	—	—	—	—	
	United of Havana	1,301	26.6.43	59,411	+	18,098	52	2,679,354	1,687,507	+	991,847	Ord. Stk.	8 1/2	2 1/2	6	—	
	Uruguay Northern ...	73	Apr., 1943	1,425	+	431	43	14,074	12,084	+	1,990	—	—	—	—	—	
	Canada	Canadian Pacific ...	17,034	30.6.43	1,654,000	+	238,800	26	27,246,200	24,206,600	+	3,039,600	Ord. Stk.	16 1/2	9 1/2	16 1/2	Nil
India		Barsi Light ...	202	May, 1943	19,193	+	5,355	8	45,240	26,693	+	18,547	—	—	—	—	—
		Bengal & North Western	2,090	Nov., 1942	264,975	+	33,087	8	449,400	561,082	+	111,682	—	—	—	—	—
		Bengal-Nagpur	3,267	Feb., 1943	932,775	+	84,975	46	10,031,400	9,111,000	+	920,400	Ord. Stk.	102 1/2	88	102 1/2	3 3/4
		Madras & Southern Mahratta	2,939	10.4.43	270,900	+	48,352	1	270,900	222,548	+	48,352	—	105 1/2	87	107 1/2	6 1/2
	Rohilkund & Kumaon	571	Nov., 1942	555,750	+	5,072	8	115,950	99,909	+	16,041	—	—	—	—	—	
South Indian ...	2,402	10.4.43	189,097	+	10,085	1	189,097	179,012	+	10,085	—	103 1/2	88 1/2	102 1/2	4 1/2	—	
Various	Egyptian Delta ...	607	20.5.43	13,460	—	1,125	6	69,807	53,698	+	16,109	Pr. Sh.	5 1/2	1 1/2	4	Nil	
	Manila	277	Apr., 1943	34,426	+	8,799	40	320,996	203,110	+	17,886	B. Deb.	44	35	36	9 1/2	
	Midland of W. Australia	1,900	3.13.43	51,142	+	29,172	51	3,606,468	3,266,869	+	339,599	Inc. Deb.	95	90	98	6 1/2	
	Nigerian	13,291	8.5.43	885,689	+	140,973	5	4,608,221	4,180,541	+	427,680	—	—	—	—	—	
	South Africa ...	4,774	Jan., 1943	1,480,058	+	169,521	—	—	—	—	—	—	—	—	—	—	
	Victoria	—	—	—	+	—	—	—	—	—	—	—	—	—	—	—	

Note. Yields are based on the approximate current prices and are within a fraction of ½.
† Receipts are calculated @ 1s. 6d. to the rupee

Argentine traffic is given in sterling calculated @ 16½ pesos to the £
£ ex dividend